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THE

DENTAL REVIEW.

DEVOTED TO THE ADVANCEMENT OF
DENTAL SCIENCE.

EDITOR:
A. W. HARLAN, M. D., D. D. S.

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THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE RELATIVE DUTIES OF THE NATIONAL BOARD OF DENTAL EXAMINERS AND THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.*

BY W. C. BARRETT, M. D., D. D. S., LL. D., BUFFALO, N. Y.

At the outset it should be comprehended that I am not responsible for the selection of the theme for discussion this evening. I had promised to present a paper before this society, and this subject was suggested to me. The officers know me to be a college teacher, holding upon this, as upon most other current topics, rather positive views. But I come not here in a controversial spirit. That would be the most unsuitable temper in which to approach a delicate question that in the past has arrayed brother against brother and led to contests personal, social and legal. I seek no polemical triumph, but rather to discover, if possible, wherein lies the road that shall lead to the best good of a profession which I love more than any other possible communion of interests; a profession which has honored me personally, with which my every earthly interest is inextricably involved, and to which I have exclusively devoted all the energies of my whole life. I may not agree with my brother as to what is wisest, but at the least it shall be an honest difference of opinion on my part. I may be positive in the expression of my faith, but I can respect his belief and honor him in his formulation of it, so long as he is courteous in its presentation. I will call in question no man's candor and honesty, and I will not permit mine to be a subject for debate. Let us then approach the consideration of a vexed question in a spirit of entire freedom, but with fairness, moderation and fraternal good-will.

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*Read before the Chicago Dental Society.

Whether justly or unjustly, a considerable proportion of the profession of dentistry has viewed the schools with inimical and prejudiced eyes. The older practitioners have witnessed a most marvelous growth in dentistry, and have seen its practitioners multiplied beyond precedent. They have now three or four competitors for public favor where formerly they had but one. With advancing age their practice and emoluments have perhaps fallen off, and they attribute this to the great increase in the number of dental schools, each of which is annually graduating a new-fledged brood to prey upon the community. The fact that some unworthy men have obtained places in our schools, teachers who do not recognize their obligations to the community as a whole, and who have prostituted the highest interests of mankind to an inordinate thirst for personal gain, has led some to the hasty conclusion that all teachers are selfish egotists, ready, if it were possible, to garner the sunbeams, or rapaciously to monopolize the free air of heaven, and to make unholy merchandise of holy things. This is a prejudice which it does not become honest men to harbor. College teachers do not materially differ from other men. They average about with the rest. They do not form a separate class, but fortunately for themselves and for dentistry, circumstances force them to remain active members of their profession. There is not an instance in our history in which any professor, it matters not what may be his teaching ability, has been able to make a decent livelihood from his college work. To a man, they have been obliged to spend their most valuable hours in otherwise earning a living.

Let us for a moment briefly review the history of dentistry in America. At the close of the War of the Revolution there were not more than ten dentists in practice in the then newly independent country. The population was about 3,000,000. That allowed one practitioner to about every 300,000 of the people. At the present time our population in round numbers may be called 75,000,000, and there are in the United States about 25,000 dentists. This makes a proportion of about 1 to every 3,000, a ratio one hundred times greater than that existing a little more than a hundred years ago. And yet, is there any man hardy enough to affirm that the 25,000 are not much more busily employed than were but the ten of the early historical period? And to what must in honesty be ascribed this wondrous change, if it be not to our American dental schools? The period of expansion began with the founding of the first professional college that ever had existence, and its progress has been exactly commensurate with the multiplication of them. America was the first nation to establish and formulate a system of education for practitioners of our tentative specialty, and it marked the distinct point of departure for all professional progress. That initial landmark was the organization by Chapin A. Harris and his compeers of a school for teaching dentistry in Baltimore, and was itself the first step in raising into a profession the empirical, wholly mechanical, promiscuous cobbling of the peripatetic but exceedingly ingenious men, who, with their little tin trunk of tools, had carried the limited dentistry of that day from door to door like so many wandering clock tinkers. Our system of dental instruction has made the name of American dentistry famous wherever civilization has a home, and until dental schools were established in other countries, in more or less close imitation of our own, American dentists had no rivals on the face of the globe.

If there has, in some quarters, been an unworthy competition in the obtaining of students, there has, at the same time, been a noble emulation in broadening the teaching and expanding the curriculum, in advancing into new fields and in raising the tone of professional instruction. If the colleges have multiplied the number of practitioners, they have at the same time extended the ground which they may occupy. The curriculum of twenty-five or thirty years ago was but the skeleton of that of today. Then one course of lectures, covering about four months, repeated for such as had not or could not induce the teachers to believe they had, been in practice for five years, was all there was to college instruction. At the present time three separate graded courses of at the very least seven months each are entirely inadequate to cover that which must be imparted, and every intelligent college instructor clearly recognizes that the fourth year must shortly be added to the course of every competent dental school. At present the students are working under too high pressure. They are forced to attend more hours than is really profitable. There is not time for the calm, careful, deliberate presentation of the immensely widened curriculum of study, but students are pushed to the utmost limit of endurance.

The better colleges are now constantly adding to the curriculum of study, for the end has not yet been reached. In my own special department of pathology there is room for any amount of expansion, and the practice of the future is to be far more comprehensive than that of today. Within a few years our schools will be teaching the proper treatment of all the diseases incident to every cavity and sinus connected with the mouth. The nasal passages, the pharynx, the ethmoidal and maxillary sinuses, will properly fall within our sphere of medicinal action, as do the local affections of the oral cavity today. Our practice will be greatly extended, and of itself that will make room for an increased number of dentists. Certainly there is no occasion for a pessimistic view of the future.

But what of the man who graduated a quarter of a century ago and who has been content with what he then acquired; who has not striven to keep up with the onward march of progress; who has the same restricted sphere of action which compassed the practitioner of the last generation? Is it any wonder that he thinks he has cause for complaint? These are they who are naturally expected to inveigh against the schools and the natural multiplication of dentists. We occasionally hear from them a protest against the presentation before our progressive societies of papers involving questions of histology, bacteriology, pathology, embryology, biology, advanced therapeutics, electro-therapeutics, pharmacology, oral surgery, comparative anatomy, and others of the sciences which have within a few years been added to our curriculum, and the dogmatic assertion is made, "that ain't dentistry." Well, perhaps it is; also, perhaps it is not. It depends upon the definition which each gives to the term and to the professional boundaries which he has set to limit his practice. It is not the dentistry of thirty years ago, for that was almost exclusively mechanical work. But it is the dentistry of today, and it is but a part of that which will be the dentistry of tomorrow.

After all, there is but one door which can with propriety admit to reputable dental practice, and that is the diploma of a properly equipped dental college. The line can by no possibility be drawn anywhere else. Whether for good or ill, the education of the dentist of the future must inevitably be entrusted to our colleges. There is no other possible source of illumination, for of course it is madness to think of entrusting it to irresponsible individual practitioners. There is no escaping the inevitable conclusion that the profession of tomorrow must be what the colleges of today make it. The embryo dentist must spend the most impressible years of his professional existence under the guiding hand of the college teacher. He will, upon the whole, be what they make him.

It is not, however, conceded that the unreasonable criticism of individual cases is based in either truth or fairness. Colleges can not make honest men out of rogues, and they must accept the material offered them. They can not even make competent practitioners of their matriculates. At the best, they can but offer the opportunities for students to make good dentists of themselves. Other schools are not held responsible for the subsequent professional conduct of their graduates. Why should ours be? They can and should instruct their classes in what is right, but when the graduate goes out from his alma mater he passes beyond her control. Something more than a generation ago one of the professors in Harvard murdered another professor and attempted to destroy all evidences of his crime by incinerating the body in the college furnaces. It was as brutal a crime as was ever committed, and Professor Webster was properly hung for it. But was grand old Harvard University ever held responsible? No; the deepest sympathy went out to her, as it does to the innocent mother of a degenerate son, that one of her very family should have so disgraced himself and done violence to her high tenets. If homicide were to become general among the graduates of the university, then might we suspect that the influence of the faculty was vicious, but so long as the social and professional criminals bear even a less proportion than in non-professional life, the exceptional derelictions can not of right be charged to college influence.

But, with these limitations it must be admitted that the profession of the future will in general terms be what the schools shall make of it. In this view of educational matters the very gravest responsibilities are assumed by our teachers, and the profession and the world has an indubitable right to hold them to the strictest accountability for the exercise of the powers vested in them. They occupy exceptional positions, and that which may be a fault in the layman becomes a crime of deep dye when committed in the face of impressible students by the men to whom they look for instruction, not only by precept, but by example. His qualifications must be established to the satisfaction of competent judges appointed for the purpose. His honesty must be beyond question and his morality without a shadow of a stain. He is entrusted with the gravest responsibilities; he should of right be held to the strictest accountability.

If all teachers were swayed only by unselfish considerations, it must be patent to all that those who make a special study of professional education, and who devote their lives to its development, would be best qualified to conduct the schools, and wisdom would demand that they be left entirely untrammeled and free from restraint or interference. Pedagogics—the science of teaching—must be learned as well as dentistry, and the competent instructor gets his teaching knowledge no more by intuition than does the practitioner. But experience in human nature long ago demonstrated that no man or set of men can safely be trusted with absolute and irresponsible power. In social matters this soon creates the dogmatic, arrogant opinionist. In political affairs it eventuates in the autocratic, despotic tyrant. In religion the consequence is the intolerant, persecuting bigot. The Puritan fathers fled from religious proscription in the old country only to establish a more intolerant interdiction in the new, as soon as their irresponsible power was firmly established. The honest religious zeal of the early Christians, who could only worship God according to the dictates of their own consciences in secrecy and seclusion, degenerated into the execrated Spanish Inquisition when they obtained complete ascendancy.

There is an instance that comes even nearer home to us. When in the early days of organized effort the first dental society was formed in New York, it became the undisputed mouthpiece of what there then was of dentistry. It had no rival to dispute its authority, and one of its early edicts was that no man should be considered regular or reputable professionally, or should receive fellowship at the hands of those who alone claimed to be orthodox, if he used or countenanced the use of amalgam under any circumstances whatever. A more offensive exhibition of dogmatism, prejudice and intolerance was never embalmed in any kind of legislation. Some of us have in later years witnessed the same spirit, in an attempt on the part of a comparatively small body of representative dentists arbitrarily to pronounce who should and who should not be considered regular and reputable in educational matters, the standard to be prescribed and changed at their pleasure. It was an unwarranted assumption of authority which threatened the professional independence of every dentist in the land, and it will embalm the names of its authors alongside those of the intolerant men who made the pronunciamento against amalgam.

It is, then, certain that there is no body of men who are charged with important social, political, religious or educational duties, whom it is safe to entrust with irresponsible power.

It must also be admitted by every candid man, whether teacher or layman, that the responsibilities and obligations, and the magnitude of the interests involved in the conduct of our professional educational institutions, absolutely demand that they shall be responsible to and be supervised by some competent authority if we would prevent their degeneration. The American idea of fostering education and preserving it secure from sectarian, or class, or political domination, has not prevented the adopting of proper safeguards against pollution. Nothing is so deeply engraved on our national character as our determination to preserve undefiled the springs whence flow the streams of intelligence, and this is why we have been able gradually to incorporate into our body politic the most ignorant and degraded of the product of foreign immigration, and gradually to convert it into a citizenship that is a model for intelligence and national integrity. Our public schools have maintained a high character and have not depreciated in tone, because they have in all instances been subjected to law, and kept under the proper jurisdiction of competent legal officers and departments of government. If in any state or community this supervision has been inefficient, or in any way biased by improper considerations, an exceedingly sensitive public sentiment has been at once aroused, and the system or administration has been promptly changed, because it was itself in turn responsible to public opinion. When sectarian influence has attempted to manifest itself in the conduct of our common schools, the community has arisen as one man and made its voice heard in tones not to be mistaken.

It must then be accepted that it is in harmony with our political institutions and with the general sentiment of our people that our professional colleges, as in the case of other schools, must be held responsible to some proper supervisory power, which shall have authority to enforce its righteous mandates. It only remains to determine what shall be the character and status of such a governing body. I think we may agree that it must possess the following attributes and qualifications:

First. It must be a power that has no special or personal or class ends to promote. It must be quite disconnected from any conflicting interests which might possibly bias its decisions and warp its judgment.

Second. It must have a thorough acquaintance with the subject under supervision in its every aspect, or possess the means to acquire technical knowledge at a moment's notice.

Third. It must have the legal power and authority to enforce its mandates, and to prescribe the legal penalties for refusal or neglect to conform to the requirements demanded. Such punishment none but a competent judge and jury can be trusted to inflict.

Fourth. Its disinterestedness must be above suspicion. It must not be tainted with any political, sectarian or class affiliations whatever, and it must possess the entire confidence of all concerned. And this freedom from any possible unworthy motives, or for seeking personal gain, does not alone refer to pecuniary advantages, for opportunities to acquire power, to have the self-consciousness of ability to govern and control others, to dominate men and events, possess allurements which mere sordid gain does not present. It is not conceivable that Alexander the Great, or Caesar, or Napoleon were influenced by any thought of pecuniary emoluments, and it is certain that men in professional circles will squander more of their time and manhood to obtain and to retain positions of power and influence which carry with them nothing more than the authority to dominate others, than they would in the expectation of pecuniary returns.

And now let us, in turn, for a few moments consider the State Dental Examining Boards, and their fitness to act as the general supervisors of professional affairs. They are the outgrowth of the tentative, unsettled condition of the formative period of dental organization. Thirty years ago the dentists of America were groping in the dark in their efforts to systematize a practice that was growing and developing beyond any previous conception. It should be remembered that there were no precedents to guide us, no established landmarks by which our course might be laid out in advance. We were traversing unknown fields, navigating uncharted seas. There was no dental profession in other countries whose experience might assist in the work in hand. The future boundaries of our practice could not even be conjectured, for the work of differentiation from mere handicrafture on the one side, and medical practice on the other, had not then proceeded far enough to enable even the wisest to predict the exact course it was to pursue. We were divided into two factions, one of which insisted that the dentistry of the future must be separate and distinct from medicine, and the other that it must be only a specialty of the mother profession, like ophthalmology or surgery. The first was the view of those who idealized the constructive, and would delegate the curative to general medicine; the latter of those who would debase prosthetics into mere mechanics, and draw the same line of demarkation which in medicine exists between the oculist and the optician. Later developments have shown that each was right and that both were wrong.

But in this time of uncertainty and absence of any accepted professional policy, it became necessary to determine what might and what might not be accepted as ethical and regular. Dental societies were formed everywhere, and at the outset were composed of the most heterogeneous elements. To some power must be delegated the authority to pronounce concerning regularity, and Boards of Censors, or their equivalents, were appointed. Dental legislation was being invoked to aid in the work of organizing all the conflicting components, and some acceptable body of men must be designated to scrutinize and tentatively to receive or reject the material offered.

Perhaps a very brief account of the founding and organization of the profession in the State of New York, the largest in population of any, by one who from the outset was active in the progressive movement, may not be unprofitable. The law of New York was the first effective legislation ever secured, although Alabama had an act previous to the Civil War which made dentistry in that State subject to regulation by the medical profession. The first enactment by the legislature of New York, in 1868, did nothing more than to declare what should and what should not be considered reputable dental practice. There were no penalties whatever for that which was irregular, but it was sought to place a kind of premium on that of the better kind by giving it legal recognition. The diplomas of the dental colleges were recognized as the highest qualification, but thirty-five years ago the dental graduates were few in number, and old practitioners, who had entered the young profession before there were opportunities for proper professional study, could not give the time necessary for a dental college course. To make these reputable men regular in standing, the State Society, which was organized under the law, was authorized to confer a special degree—that of Master of Dental Surgery—upon men who had attained to certain professional intelligence. This made necessary the appointment of a board which should examine and recommend to the State Society candidates for the degree, and this was the first State Dental Examining Board ever organized. It was appointed by and was the agent of the State Dental Society. Subsequent State legislation has made of this body a board responsible to the State Department of Education, rather than to the State Dental Society, in conformity with a general policy which appoints examining boards for all the other professions.

The State Board in New York, as in other States, was then appointed primarily to serve as the executive committee of the State Society in promoting the following purposes:

First. To organize an unorganized profession and to bring it under the dominion of law.

Second. Officially to determine what should and what should not be accepted as regular dental practice.

Third. To elevate the general tone of dentistry and draw an authoritative line between the regular and the irregular practitioner, by extending professional recognition to the former and withholding it from the latter.

Fourth. To make dental societies more effective by vesting in them certain carefully restricted legal powers.

Fifth. In the fulness of time to attempt the legal exclusion from practice of incompetent persons, who should not have been made regular by—

(*a*) Having been in practice at the time of the passage of the repressive legislation.

(*b*) Having been graduated from a legally organized and conducted dental college.

(*c*) Having passed an examination conducted by a competent board established by law.

It was never contemplated that either class "a" or class "b" should take the examination provided for class "c," because for the first an act requiring it would be in the nature of *ex post facto* legislation, and therefore unconstitutional, while the possession of a competent college diploma would be evidence of having passed an examination certainly the full equivalent of that demanded of class "c."

In the course of time legislation was secured in the most of our nearly fifty separate States, but unfortunately there was no concert of action, interstate consultation, or professional co-operation among the promoters of the movement, and the consequence was what might have been anticipated; a national hodge-podge, a medley of conflicting and irreconcilable enactments, which has so far absolutely defeated that which it was most desired to bring about, and arrayed the profession of one State against that of another, undermined the confidence in the schools and divided us into antagonistic and in some instances warring factions. One State provided that its State dental society should have supreme and irresponsible power. This was class legislation of the rankest kind. Another enacted that the Examining Board should be supreme, and that it should be appointed by the Governor of the State, a political officer. This was the worst degradation possible, for it carried professional affairs into politics and debased the board to the level of the ward caucus. Another made the board the creature of a State department, and thus created a bureaucracy that would necessarily become entangled in the infernal system of red-tape and precedent which governs all such bodies. Had all agreed upon some definite system, which would place the government of dentistry in more than one mutually responsible body, all this confusion might have been avoided, and the spectacle of internecine war between colleges, boards, societies and profession, might have been avoided.

What shall be done in this unfortunate state of affairs? There is no alternative but to retrace some of our steps and make another attempt to secure something like wise and uniform legislation. We must recognize three distinct branches in dental organization and government, each having its own special field for labor, each charged with its own proportion of responsibility, each accountable to the organic law of the land, each the peer of the other, each the co-operator, the coadjutor, the auxiliary of the other, and each the independent part of one co-ordinate whole. Even as in our civil government we have the legislative, the judicial and the executive departments, three joined in one, so should the legislative, the executive and the educational departments of dentistry, represented by the dental society, the dental examining board and the dental school, labor together in harmony to promote the same glorious ends.

But neither of these can in justice or expediency assume jurisdiction over the other. Partly through a mistaken view of its proper functions, partly through the impossibility in our unorganized state of clearly perceiving what was the proper path to pursue, and in some instances partly through personal ambition and the inordinate thirst for domination and power which seems almost instinctive in aggressive men, there has been at times an attempt on the part of one of these co-ordinate authorities to dictate to another and to assume an offensive tone of superiority. The boards, without any doubt actuated by laudable, if mistaken, motives, have attempted in some instances to meddle with the details of the conduct of the schools. This the latter must resist to the very last extremity, for it threatens, not only their independence and effectiveness, but their very existence. There is plenty of room for the exercise of all the energies of the Examining Boards in accomplishing the following results:

1. The regulation of practice instead of teaching.
2. Hunting down and exterminating the fraudulent schools.
3. Preventing illegal practice by looking to the registration.
4. Prosecuting known cases of violation of the law.
5. Fostering and stimulating instead of dominating societies.
6. Confining themselves to executive instead of legislative matters.
7. Co-operating with and helping the schools instead of repressing them.
8. So long as they do examine students, making prominent the skilled work of every-day practice in which the examiners are admitted experts, instead of confining their investigations to the didactic and scientific studies, of which in the very nature of things they must be in almost entire ignorance.

I have already said that teaching is a business of itself, and skill in it must be painfully acquired, as is all other branches of technical knowledge. I have endeavored to show how rapidly the profession is advancing, and how our curriculum is being extended year by year. The graduate of even ten years ago knows little of the scope of the instruction of today, unless he has been in the business of teaching and has thus been enabled to keep pace with the technical advance in this direction. It is an absurdity to place the examination of students in the hands of men who know almost nothing of that in which undergraduates are and should be instructed. In most States the regulations forbid the appointment to positions on the examining boards of the only men who can by any possibility know what the instruction is or should consist of. The colleges have themselves positively refused to allow or recognize such appointments, and the consequence is that every competent college man knows but too well that State Board examinations are, as a whole, but a farce, and that but too often students are commended for that in which they are most deficient and plucked in that of which they know far more than does the examiner. No man can ascertain the acquirements of a student in basal principles by questions and answers selected from some quiz-compend.

Perhaps the greatest wrong lies in the star-chamber examinations held by some boards, in which the questions propounded and the answers received are not given to the public. This practice makes of the board an irresponsible, secret junta, sitting in camera, whose decisions it is impossible to review, and under which system the greatest wrongs may be committed. Every student, every teacher and every practitioner, has the right to know the grounds upon which a judgment rests, for it is a fundamental principle in our national jurisprudence that no man may be tried unless all evidence is given in public and submitted to the light of day. You will bear with my plain language when you all must recognize its truth.

But I have already shown that it is imperatively demanded that the colleges must be responsible to some power. The conduct of certain of them in the past shows that this is absolutely necessary. There has been too much of touting for students, and unworthy men have been accepted and graduated. Even ignorant and unqualified practitioners have obtained positions in colleges, and have been entrusted with the keys which open the door to practice. But I have shown that this supervisory power must be placed in the hands of competent and unbiased persons. This can not be assumed in all cases of the present examining boards. They must themselves be held amenable to some higher authority, for even the members of boards can not safely be entrusted with unlimited and irresponsible authority. We need not travel far afield to find instances of evils wrought by them. The dental examination scandals in California and other States, and the sale of the questions of the State medical examination of Pennsylvania, demonstrate that the exercise of the extraordinary powers granted to examining boards must be guarded by stringent legal restrictions. The fact that a legal enquiry into some of the examinations in New Jersey has demonstrated that unfairness and rottenness, and that certain other examiners have resented as impertinent a demand for lists of the questions asked of students and the answers returned in disputed cases, thus showing that some at least of the members of boards consider themselves above law and privileged to inaugurate star-chamber investigations, shows that examining boards as well as colleges need restraint.

The third department of dental organization, the dental society, can not exercise the rightful domination over the two others, first because it should be simply legislative, second because it is but a voluntary body itself, without special authority to enforce its mandates, and third because it is, or should be, one of the three co-ordinate bodies which must work together on the same plane.

What, then, is left? Nothing, save another effort to secure new and competent legislation that shall be as nearly uniform in all our States as is possible under the varying conditions in existence, and which shall definitely prescribe the duties of each of the three bodies named, prevent encroachments of the one upon the other and and hold each to a rigid accountability to the law. Especially must the schools, to which are entrusted such great responsibilities, be carefully looked after. Their doors must be opened to the visits of delegations from the two other departments of our profession, and if found lacking in any essential qualification they should be made to face—not a delegation of fellow practitioners, who may be competitors in practice and therefore a biased tribunal—but they should be tried before and by the law under which they are organized, the societies and the boards their accusers and prosecutors if you please, but the courts their judges. The students who are so unfortunate as to be pupils of unworthy schools should not, as at present, be the victims to whom is measured out the punishment, but the guilty schools should be made to suffer for their own shortcomings.

To this end I wish, in closing, to commend your efforts. If in the city of Chicago its most prominent society will begin an agitation in its own midst for better laws and purer legislation, the great State of Illinois will soon purge itself of the reputation of harboring more fraudulent and pretended colleges than all the other States combined. In thus redeeming itself, Chicago should have the co-operation of every State Examining Board, every dental society. That it will receive the active assistance of the colleges is assured from the history of the past, for they are the only professional bodies that have spent a dollar or put forth a sustained effort in doing that in which the examining boards should have taken the lead, instead of confining their efforts to the regulation of the colleges, which are faithfully and successfully striving to regulate themselves.

ENAMEL CLEAVAGE RELATIVE TO THE PREPARATION OF CAVITIES.*

By J. Milton Walls, D. M. D., St. Paul, Minn.

In the consideration of enamel cleavage with respect to the preparation of cavities, I find the subject so broad in scope as to prevent an exposure of all the ideas that present themselves for consideration. It will be my aim to take up the features that seem most important from a practical standpoint. The subject has forced itself upon me from the almost daily observation of ultra results arising from a lack of its proper consideration by operative dentists.

The structure of the enamel is such that once its continuity is broken, the portions adjacent to the fracture are readily dislodged. It is not my purpose to deal exhaustively on the histological features, for you are doubtless quite familiar with these, and will attain a better understanding of them from the micro-photographic pictures presented. For these illustrations I am indebted to Dr. F. B. Noyes, whose extensive work along these lines has won for him a most enviable position. You understand that by the cleavage of enamel is meant the characteristic of breaking up along the lines of the cement substance, parallel with the long axis of the rods. The interprismatic substance being weaker than the rods themselves sustains the fracture. A cross section of the enamel

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*Read before the Minnesota State Dental Society.

(Fig. 1) clearly shows the relative positions of rods and cementing substance. These are represented by the multi-lateral forms in situ with the cementing substance encasing them. These rods, supported on their inner ends by the dentine, pass outward perpendicular to, or at acute angles to, the perpendicular to the surface of the tooth. (Fig. 2.)

They vary slightly in diameter throughout their length, but are practically the same at the dentinal ends as at the periphery. The outer circumference of the enamel being greater than the inner necessitates a filling in at the surface with shorter conically shaped rods. A point of some clinical importance.

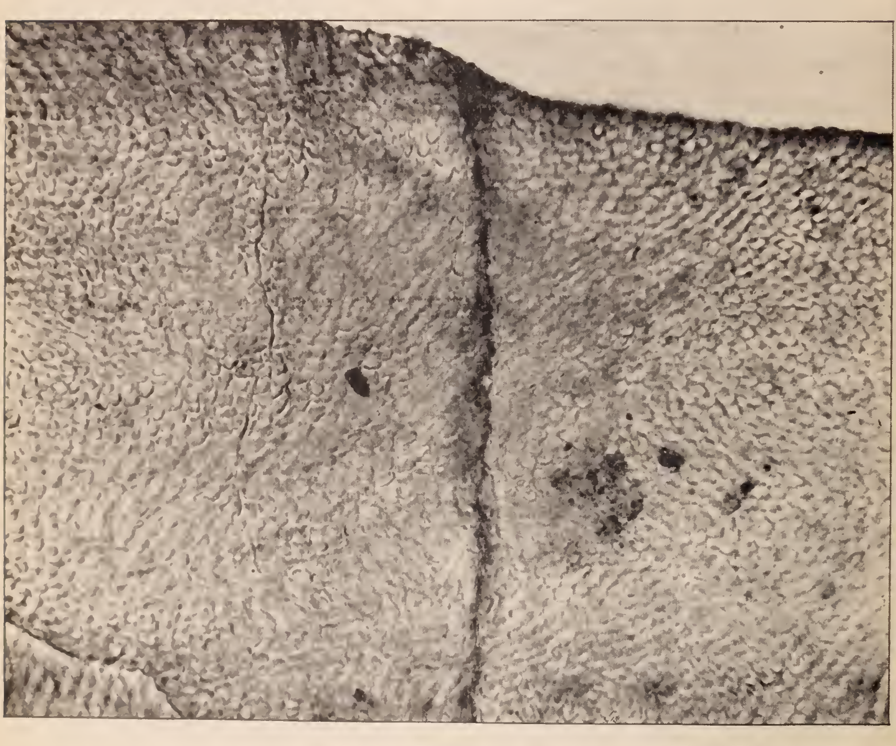

Fig. 1.

The direction of the rods will be found to vary in the different parts of the tooth. (Fig. 3.) In the middle third of the crown their direction is nearly perpendicular to the surface; but passing outwardly they diverge in both directions from the middle of the crown. That is, in approaching the gingival the rods are directed apically (Fig. 4), and as they pass occlussally the angle of their direction with the perpendicular becomes greater, until at the crest of the cusp they have assumed the direction of the long axis of the tooth.

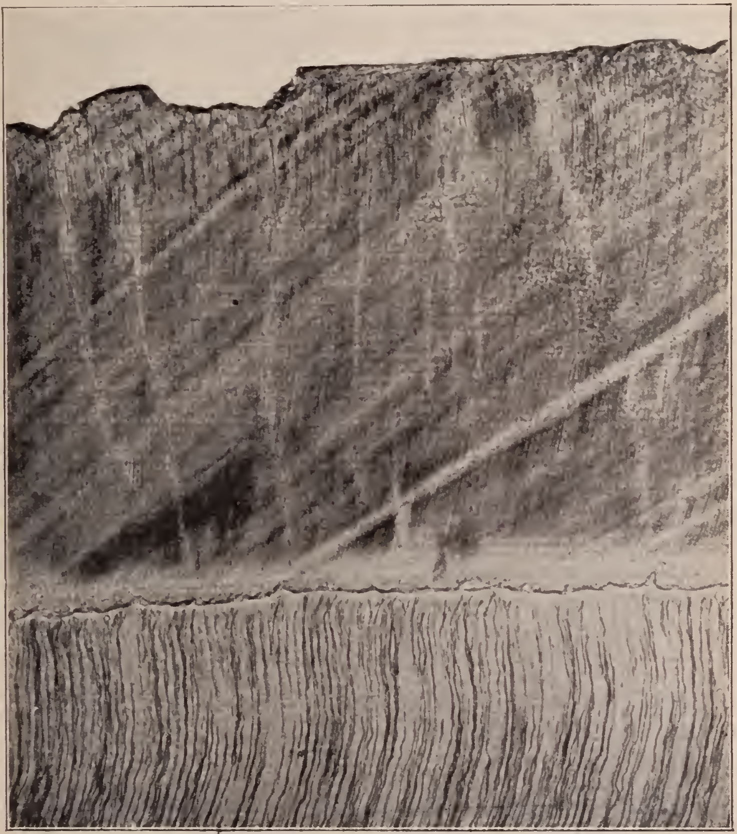

Fig. 2.

These observations must be noted with care in preparing cavities on the buccal surfaces of the teeth. Passing over the crest of the cusp toward the median groove the direction of the rods on the occlussal slope of the cusps reaches again the perpendicular to the enamel surface.

The question arises, how are we to determine their direction

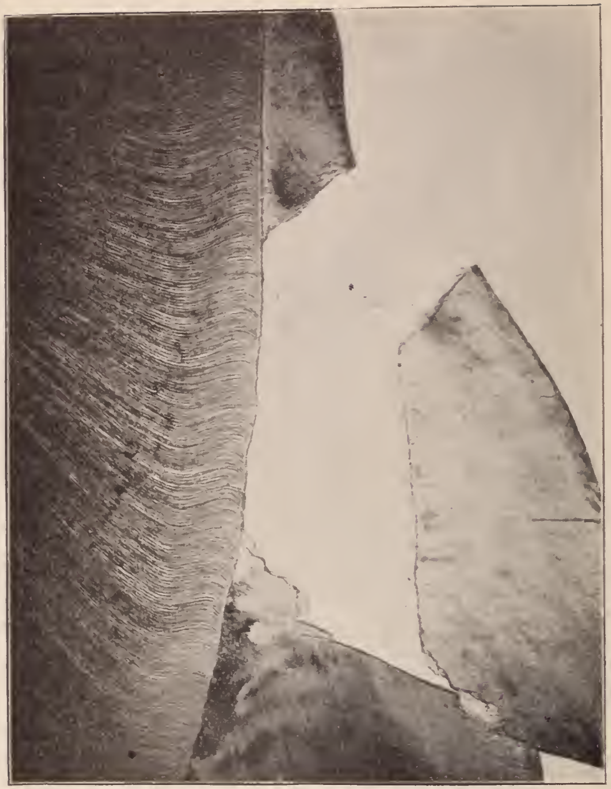

Fig. 3.

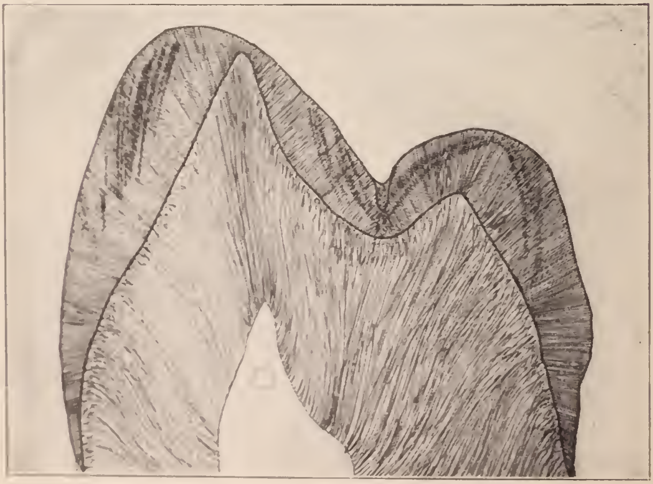

Fig. 4.

for the practical purposes in beveling the enamel margins? It is readily noted in microscopic section, and almost as easily noted in practice by the proper use of hand instruments.

For illustration, first we will take a simple occlussal cavity. If the decay has not sufficiently progressed to undermine the enamel, this may be accomplished by a single cut of an inverted cone bur.

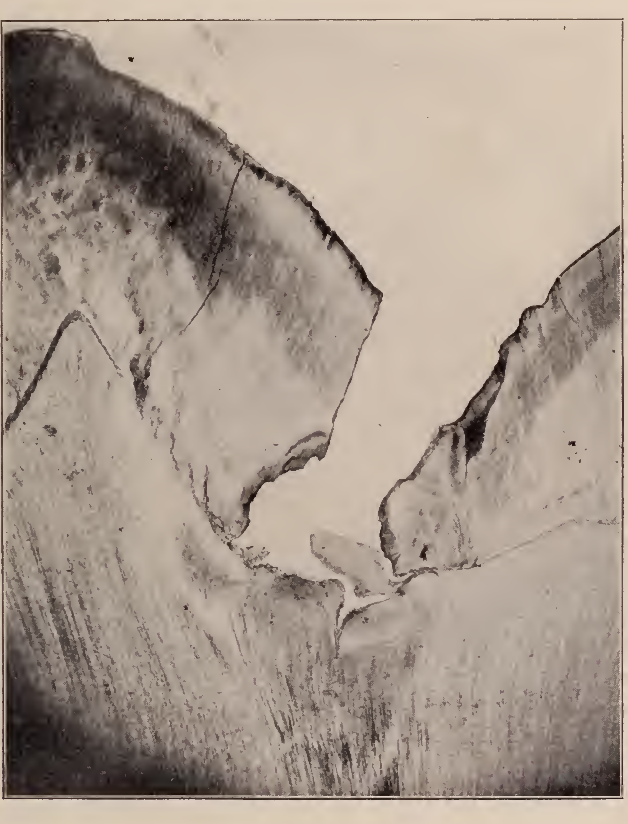

Fig. 5.

Then, by the use of a sharp chisel, following the axial direction of the tooth, the enamel will readily split in the lines of least resistance. The cavity then, without further preparation, with the dentine as the base would be trapezoidal in shape (Fig. 5), and unless the borders were carried well toward the marginal ridges, it would be necessary to bevel off the ends of the rods to attain borders perpendicular to the base (Fig 6), and at the outer edge a further bevel for convenience form. The latter marginal bevel I do not deem advisable where amalgam is to be used as the filling material.

There is one characteristic of the enamel I wish but to touch upon before leaving the surface of the tooth under discussion. That is the irregularity so often found in the direction of the prisms. Instead of being straight from inner to outer circumference of the enamel, their inner ends often reveal a twisted and curling appearance. (Fig. 7.)

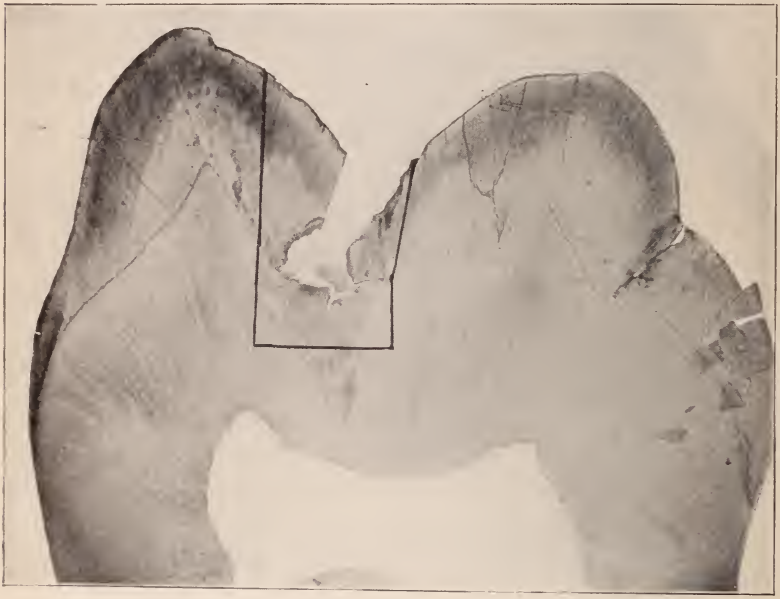

Fig. 6.

This condition of the enamel is usually limited to the occlussal one-third of the crown, and is frequently noted only in the cusps, rendering much strength and tenacity to these exposed parts. Enamel of this nature offers great resistance to the incisive instruments, unless the supporting dentine has been first cut away; and even then it is sometimes quite defiant. A little more care should be exercised in making the marginal bevel in these cases, and especially where abrasion of the teeth has occurred. It will be safer to increase the angle of the bevel with the cavity wall slightly, in order to cut off or lock in short rods or twisted ends. When gold is to be used as the filling material, the bevel may be short; but when the filling is to be of amalgam, the beveled surface should be lengthened, thus diminishing its angle within the cavity wall. This leads to a very important subject, and we will pass from simple cavities to axio-occlussal cavities. Those involving a lateral and the occlussal surfaces, and including the cusps or marginal ridges.

Let us take, for illustration, Fig. 8, a proximal cavity in one of the posterior teeth. In order to bring the margins of the filling out from contact with the adjacent tooth, the cavity is cut well buccally and lingually, and following the direction of the rods it is brought occlussally almost and sometimes quite to the marginal ridge (Fig. 10), leaving so weakened a wall there that necessity demands extension into the occlussal surface. It is at the junction of these two surfaces that the greatest obstacle is met, at least when amalgam is to be the filling material.

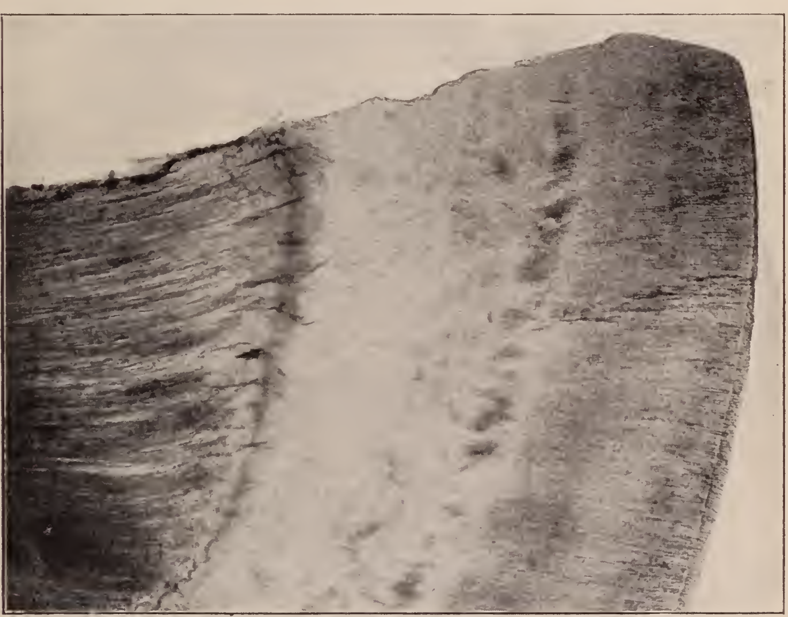

Fig. 7.

Then the shape of the tooth has much to do in altering conditions. Imagine, if you please, the teeth to be of the type square in outline, with broad contact surfaces. In approaching the linguo or bucco-axial angles (cross section at the middle of the crown, Fig. 9) the direction of the rods, instead of being centripetal and forming approximately right angles with the surface, is such as to form acute angles as small as 25 degrees. This, accompanied with their direction at the marginal ridges, where they begin to arch over the cusps, demands most careful attention.

From the chart the cavity walls, following the cleavage lines, are seen to slope away in two directions. By cutting away the portion of tooth substance which forms an angle at the junction of the occlussal with the proximal cavity, the anchorage is almost destroyed and the tooth walls greatly weakened.

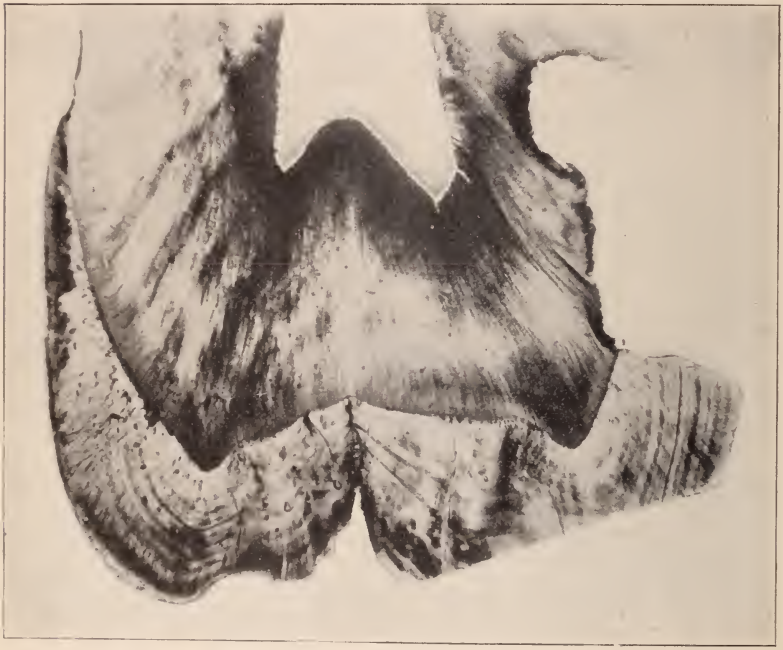

Fig. 8.

I have adopted the plan recently of cutting into the occlussal margin between the apex of this angle and the proximal cavity margin, forming a concave outline and reducing greatly the length of the marginal bevel; then, by rounding out the amalgam well at the margin of the cavity, there will be a sufficient body of material to insure against fracture of the edge. The same form may at times be convenient for gold; but the necessity of avoiding thin edges with that material is not so great. The amount of stress on these portions of the teeth must be borne in mind. In the formation of the gingi-

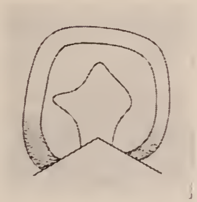

Fig. 9.

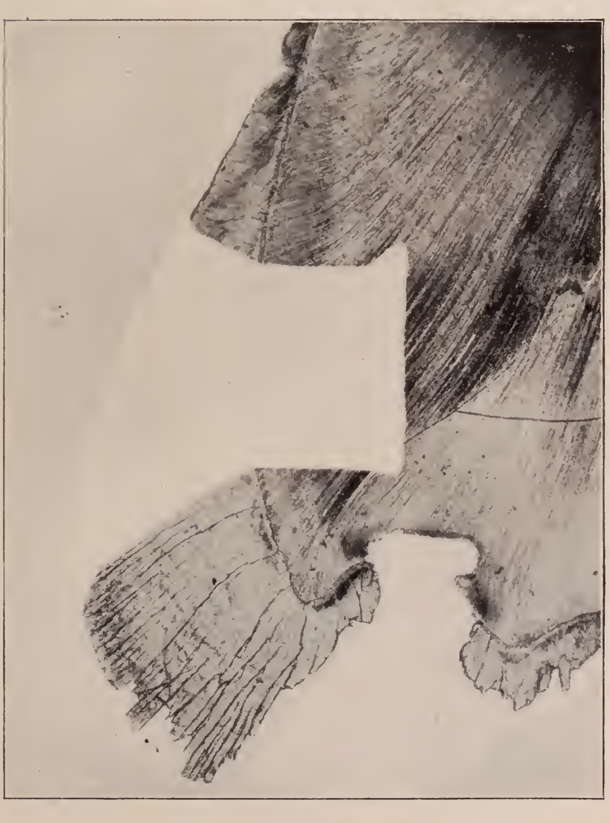

Fig. 10.

val border of the cavity, the direction of the prisms is frequently overlooked, and a square base, or possibly a ragged one, is left, only to result in dislodging the short ends of the rods by the packing of gold, with the consequent result of gingival decay. The nearer we approach the gingival the greater must be the angle of bevel with the cavity wall. There is one class of cavities where the lack of respect to enamel cleavage is felt most disastrously. I refer to the proximal cavities in the anterior teeth. In these teeth the plates of enamel are thin and the amount of dentine between them small. The labial and gingival borders of these cavities are not often faulty, but the incisal and lingual are so frequently found defective that I feel that the errand of my paper shall not be amiss if, in drawing

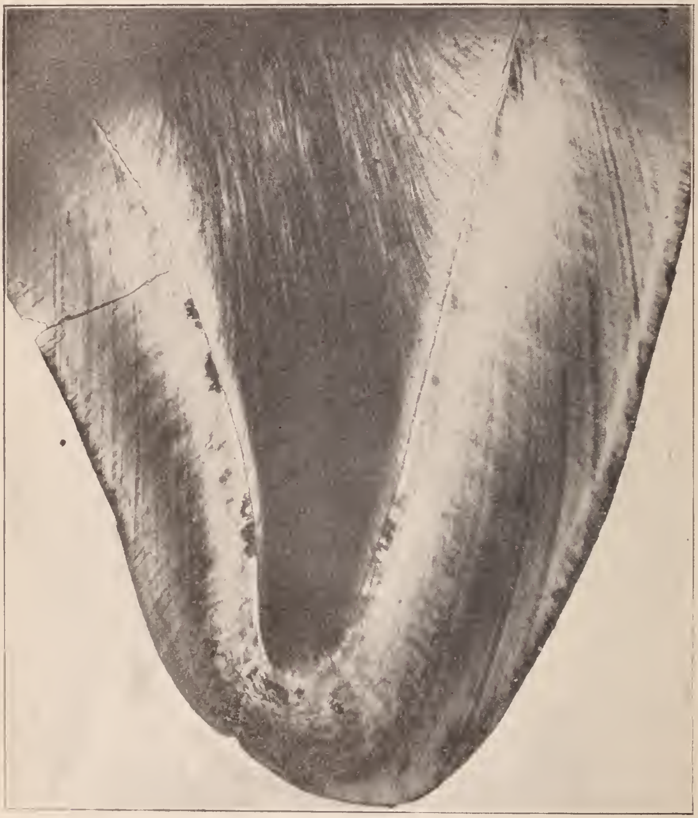

Fig. 11.

your attention to the histological features of the enamel, any new ideas in the preparation of these cavities may be imparted. (Fig. 11.)

From this longitudinal section of an incisor, note the direction of the prisms in the incisive one-third. The enamel will cleave at six to twelve centigrades from the perpendicular. Where the lingual plate of enamel is frail, with no supporting dentine, it should always be cut away, and the margins so beveled as to cut off any short rods and permit the ends of those adjacent to the cavity to be protected by the gold.

Too often, I think, the evil comes from a desire to fill entirely from the labial or without any or little separation.

The enamel is cut away to the lingual ridge and beveled in such a manner that the inner ends of the rods are cut off, and a square base is presented from the labial, while the lingual aspect would not reveal a cavity at all. In all such classes of cavities it is necessary to bevel the frail enamel margins from the lingual surface and protect them with gold, packing against that surface from underneath. It has been said by a fraternal friend, and I believe it is true, that a cavity well prepared and poorly filled is much better than one ill prepared and well filled.

THE MOUTH AS AN INDEX TO GENERAL PATHOLOGIC CONDITIONS.*

By Carl T. Gramm, M. D., Chicago, Ill.

The mouth is an ever open book, an ever readable hygeiameter to an expectant observer, largely because its tissues are within easy reach of ocular demonstration. Moreover the tissues of the mouth are unique in their sensitiveness to general physical degeneracy, because they are obliged to maintain their integrity under the most trying conditions.

Thus the mucous membrane is directly exposed to irritation and infection, borne by air, drink and food. While the tongue and the muscles of the cheek are supposed to clear the mouth of remnants of food and the saliva flows abundantly to aid chemically and mechanically in this function, it nevertheless remains a fact, stated by high authority, that from a biological standpoint the mouth is filthier than the rectum.

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*Read before the Odontographic Society of Chicago.

The periosteal membrane within the dental alveoli serves as cushions to receive the pressure of antagonizing teeth. If the same continued blows that these membranes are subjected to were dealt to periosteum in any other region, inflammation and resorption would speedily ensue.

There is not another structure in the human system which in its development bears witness as frequently, as graphically and as persistently to intra- and extra-uterine malconditions as does the enamel, and no other structure is so readily attacked and destroyed. At no point save within a few foramina are nerve fibers so likely to be compressed and angered by engorged blood vessels as within the pulp canals of teeth, and but few structures yield life to so mild irritants as does the pulp. No wonder, then, that hygienic disturbances should post their warnings in the oral cavity, and often too before their manifestations have become seriously marked elsewhere.

Before there are noticeable rheumatic twinges the peridental membrane responds to the excess of uric acid and there are repeated periods when the teeth "feel sore." Alimentary disturbances immediately and visibly affect the mucous glands and membranes. Periodically hypersensitive teeth are direct witnesses to exhausted nerve force, and auto-intoxication registers pronounced complaint by causing the gums to become congested. Busy men and women are not in the habit of noting passing slight subjective symptoms and attributing to them their proper and deeper significance. For instance, rheumatic twinges are often ascribed to the weather and soon forgotten. Gastric and intestinal disorders must have become severe before consciousness of them is awakened. Dull headaches and enervation do not startlingly suggest auto-intoxication. These symptoms are all ascribed to minor affections, but little attention is paid to them, and in the mind of the busy individual they are recognized but in a remote semi-conscious way. Thus the family physician may never become aware of the serious inroads insinuatingly, but certainly, made upon the longevity of his patients. But for the dentist—the close observer of the oral tissues—the story is plainly and fully written. I do not agree with those writers who claim to diagnose certain obscure undeveloped general lesions by color lines upon the gums. For instance, I have examined scores of tubercular patients and have failed to find the peculiar diagnostic demarkation described by well-known authors. I believe leucoplakia buccalis to be even a more frequent manifestation in these cases. I have seen diabetics with evenly tinted, healthy gums and on the other hand non-diabetics with reputed "sugar lines." I have also in at least two instances observed the "typical lead line" of Grisolle, Cras and Magitot in children who had not at any time been exposed to lead absorption. I had in times past felt reasonably certain that I could recognize a metastatic gonorrhoeal infection of the gums by their appearance until I had as a patient a young girl with precisely the symptoms which years before had led me to closely question my male patients when they somewhat anxiously presented themselves with tumid gums which were breaking down at their free margins; with recent serumal deposits of tartar and with fetid pus flowing from about the teeth. But these self same disturbances, general malnutrition, and hydrargyrism, excepting that in the latter there is a notable fetor ex ore are usually absent in the first-named lesions.

But there are striking manifestations within the mouth that are essentially typical of their respective diseases. The diagnostic spots of measles on the buccal and labial mucous membranes known as Koplik's spots, after their discoverer, are of this order. Melanosis of the same tissues is one of the typical signs of Addison's disease. Leukoplakia oris, observed in men, but rarely in women, is a manifestation in phthisis and often a forerunner of carcinoma. Leukaemic stomatitis is not to be considered an accidental complication, but a symptom developed prior to the swelling of lymphatic glands and enlargement of the spleen—leukaemia.

The appearance of this form of stomatitis is varied. It may assume the type of scorbutic inflammation and suddenly disappear (Westphal); it is just this circumstance which presents itself as a typical diagnostic sign. In lichen oris the efflorescences upon the mucous membranes are often the primary foci of the lesion and announce in advance the skin disease to follow. (Croker, Thieberge, Marx.)

Upon anatomical grounds alone it may be judged that the mucous membranes of the mouth are susceptible to herpes, lupus, pemphigus and urticaria—in fact, to nearly all skin diseases, and that in many instances the disease has its first manifestations within the mouth.

I will not dwell upon those general lesions and symptoms so well known to you, in which the tissues of the mouth play so important a role and often furnish differentiating features toward a direct diagnosis, to-wit, the landmarks of syphilis inherited or acquired, the pus from the margins of the gum in metastatic gonorrhea, malic acid odor in advanced diabetes; the variously coated tongue in different forms of ailmentary disturbance, the shape, color, formation and condition of teeth indicating varied temperaments and the dynamic status of the patient.

There are two leading malconditions of the mouth confronting the members of this profession, the etiology and therapy of which half a century of endeavor on the part of this body has not yet solved; I refer, of course, to persistent caries of the teeth and pyorrhoea alveolaris. Both are, in my opinion, also manifestations serving as an index to the general pathologic conditions. Wherefore, I also believe that the solution of these problems can only follow a thorough analysis of the systemic conditions underlying these lesions, and the institution of corresponding therapeutic measures, and that in pyorrhea alveolaris surgical measures are, with minor exception, a sine qua non. There are, strictly speaking, but few purely local lesions found in the mouth, these few being those of traumatic origin, those due to dentition, or to irritants, as tobacco, spices, etc. It has, therefore, always seemed irrational to me that the dental profession should insist upon confining itself to local treatment of mouth lesions.

Thus may I summarize: Whenever the human system suffers from dynamic conditions, whether idiopathic, from infection, or temporarily exhausted nerve force, the oral tissues are promptly impressed. Let physicians study the mouth in collecting data toward making their diagnoses and uncertainty will often be enlightened.

In view, then, of the undoubted relation of a large number of so-called "local" lesions of the mouth to general systemic diseases, it must be the duty of every progressive dentist to omit in no instance a careful inquiry into the patient's general health. Not unlike the medical profession, it is high time for our profession to appreciate that we are called upon to treat human beings, sick, and not teeth and mouth merely. It is needless to say that local medication is indicated in every instance, but the primary causative factors producing these local manifestations should also seriously be borne in mind. When we thus proceed therapeutically in a way calculated to accept as a guide the etiology and pathology of the general affection, then only will we become true disciples of a great science—not mere technicians!

PRESIDENT'S ADDRESS.*

By Ora Addison Chappell, M. D., D. D. S., Elgin, Ill.

In neither letter nor spirit shall I transgress or diverge from the time-honored custom of making the President's address the usual *potpourri* of congratulation, encouragement, admonition and advice.

The rate of mortality among the youthful district societies of this State during the few preceding years has been appalling. The Northern Illinois Society is unique in being the only survivor of the five children born to the State Dental Society thirteen years ago. Some one suggests that suspended animation rather than death would properly express the condition of our decimated family. If this is true, I earnestly hope the usual means of resuscitation may not be lacking to revivify our inanimate district societies before rigor mortis sets in.

Our growth of the past should encourage us to continue our efforts along the same practical lines heretofore employed, leaving the more scientific and theoretical work to the parent society. The esprit de corps and hearty good-fellowship so marked in our Society guarantee a brilliant future.

As a method of increasing membership I suggest the appointing of county committees, consisting of three or five members, their duty being to see every dentist in their respective territories, inviting co-operation and pledges of attendance. The benefits would be reciprocal to members of the committee and practitioner visited and the dentist not fortunate enough to receive an appointment on said committee would be the loser socially and professionally.

I regret that so many of our members refuse to respond to invitations for paper or clinic and I am positive they have not the proper conception of this society's purpose or it would not be so. This meeting is a school of condensed knowledge for the year and "quid pro quo," something for something, its motto, and the sooner our members accept it as such, just so soon will they get from it the most good. It is my experience that the preparation I make in fulfilling my promise to write or give a clinic is of the greatest benefit to me and I selfishly regret that I am not more frequently asked to participate.

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*Read before the Northern Illinois Dental Association.

Respecting educational requirements for students, the dental colleges as well as ourselves are culpable in not requiring as preliminary at least a high school education. A student who cannot be made to see the necessity of this, is gifted with so little professional fiber that he will be at his best merely a dentist of commercial instinct. I have good reason to believe that few of the students in our dental colleges today could read aloud miscellaneous selections without murdering the king's English, and that atrociously.

This brings me to the deplorable fact, that commercialism is not confined to the few cheap Johns of our profession. The college the disseminator of knowledge and professional ethics, is the greater culprit. Why, one of our Chicago colleges advertises itself as the largest dental college in the United States, and thereby publishes itself as the greatest commercial enterprise of dental educational institutions. Do you wonder that dental students do not find it necessary or desirable to submit to the educational requirements imposed by reputable practitioners, when they know it is only a question of price? How to remedy it? You can't. This grinding out of incompetents will go on until the public awakens to the fact that a diploma is not prima facie evidence of professional skill and attainment.

Gentlemen, let us have the proper respect for our profession. Dentistry is second to no profession, when measured by the standards of necessity and usefulness. Believe in your own ability and in the dignity of your profession, and thereby make it command the respect it is entitled to. Whatever in the province of dentistry comes to you—operative, prosthetic or surgical—accept the responsibility, and do it to the best of your ability, making the fee commensurate not only to the benefit to the patient, but also to the skill required in the operation. Fees must differ as widely as methods and operations. To illustrate: Dr. A charges fifty dollars for placing a patient's mouth in proper condition, according to his method of practice. Dr. B's fee for properly treating the same case is one hundred dollars. Does Dr. A do one hundred dollars worth of work for fifty? Well, scarcely. Does Dr. B charge one hundred dollars for fifty of service? No. The patient pays in each case for just the services received. When a patient comes to me, saying, "Dr. So-and-So will do so much work for a given price," I laughingly reply: "My dear madam, do you not see the impossibility of my doing dental work Dr. So-and-So's way, and vice versa? As we are both gentlemen of honor, you will get exactly what you pay for—no more, no less." I have in mind the case of a patient requiring a four-tooth bridge. Her dentist figured that a proper construction would cost forty dollars. Not exactly satisfied, she visited Dr. A, who would do it for twenty; and Dr. B, near by, went him one better, and said he could do it for eighteen. Carefully thinking the matter over, she decided wisely that Dr. B, for eighteen, or Dr. A, for twenty, would scarcely give forty dollars of service for the amounts stated, and returned to have her dentist make the bridge. The best skill and materials make but poor substitutes for the natural organs, and a patient can ill afford less than the best.

I would warn the Society against establishing precedents; do not run this Society in the good old way. Diversity of means and methods increases the interest and promotes growth. As an example, the symposium of this year's program is a refreshing change from the usual custom. Again, popularity or ability should be the necessary qualification of a candidate for election to any office in this society, and right here I wish to say that I have the uncomfortable feeling that I am president rather by precedent than as possessor of either of the above qualifications, and should so have expressed myself had I been present at the time of election.

In conclusion, another matter of importance presents itself—the education of our patients and through them the community at large in matters pertaining to dentistry. When this is an accomplished fact, all the perplexing questions pertaining to dentistry, including fees and educational requirements, will be solved. In other words, when the public are so well informed that they realize what poor dentistry is, and that in results it is worse than none at all; and, further, that the best is inferior to nature's product, then and then only will they demand the best.

This education of the public can be accomplished in many ways. First, at the chair. Lose no opportunity to add something to each patient's knowledge of dentistry by carefully placed questions or suggestions. Second—and I understand there has been some considerable agitation of this method—making a requirement to entrance in the public school an examination and chart showing condition of the teeth, such examination to be made by any reputable dentist. To make this possible, one must secure the co-operation of the Board of Education and Board of Health. Third, an occasional carefully written article appearing in the editorial column of your local paper.

With these words of encouragement and direction, I bid Godspeed to the Northern Illinois Dental Society and its educational endeavors.

PORCELAIN INLAYS.*

By M. R. Harned, D. D. S., Rockford, Ill.

This new branch of dentistry, which is an attempt to reach the ideal in tooth restoration, is yet in its infancy, and we do not yet even know if we are on the right track.

For years our ideal filling has been something with which we can imitate the shades of various teeth, possessing the qualities of adhesion, durability and easy manipulation.

The former of these have in a measure been met by the porcelain inlay, but the last named, "easy manipulation," is not a characteristic of this form of filling, for I believe there is no operation in dentistry requiring greater skill, better judgment and more delicate and careful manipulation, than does the insertion of a properly fitting, and shaded, porcelain inlay.

The question "if we are on the right track" arises because we recognize the fact that the whole mechanical combination is no stronger than its weakest part; hence with the making and shading of the inlay must go a knowledge of cements, which most of us do not possess, for most of the cements under ordinary manipulation are but temporary, and they limit the life of the inlay.

Another reason the question of "being on the right track" is raised is because of the brittle qualities of porcelain, which, so far as I can see, can never be overcome.

Another objection to this material is its limitations of applicability, for if we expect it to withstand mastication we must have it entirely surrounded with tooth structure or have a large bulk of the porcelain, as in crown and bridge work, which in my experience has decided limitations also.

In fact I believe porcelain work as a whole, like "extension for prevention," is now in the boom state and will soon have a collapse and be condemned, afterward to take its normal place, which is a very important one.

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*Read before the Northern Illinois Dental Society.

I have not chosen the subject because of information possessed, but rather to get information, for I have found the way to get knowledge of a subject is to try to write upon it, and of a mechanical job is to try to do it.

My methods are always open to criticism and I expect you to say what you please.

My method of making a porcelain inlay is first to prepare the cavity without undercuts, but with a flat base, or nearly so, for the inlay to rest upon, opposite the direction of the impact.

I then take a piece of platinum foil as soft and thin as can be procured from the dental depots, cutting off a little piece without special regard to the size of the cavity, except, have it large enough to wrap around the tooth laterally slightly beyond the margins of the cavity. Then place it across the cavity and with a pellet of dampened cotton, small at first and increased to about the size of the cavity, gently press the platinum down to the bottom of the cavity, allowing the ends to draw as much as necessary to carry the platinum down without tearing; then with a round end burnisher of proper size *(which is the same size of the bur with which the cavity has been shaped)*, gently burnish down, but not with intent of finishing; anneal frequently. Now follow Dr. Taggart's suggestion of placing a piece of tape around the tooth and over the matrix to hold it firmly in place, while finishing the burnish. Then burnish thoroughly right over the tape, remove the tape, fill the matrix with hard wax and remove from the cavity.

In case you have torn more than slight cracks, which you will know before removing, burnish another small piece over the hole before filling with wax.

The wax prevents the matrix getting out of shape in removal from cavity. Do not attempt to trim matrix. Now invest in fine asbestos fiber and set upon a gas burner and at once burn out the wax.

Then select your shades from samples fired from the body to be used (and I think the outfit put up by the "Dentenax" folks the best on the market). Do not attempt to fill the matrix full for first firing, and as all porcelain bodies shrink (and this shrinks 20%), either fill the matrix only around the margin or make a hole into the center of the body so that the shrinkage will take place toward the margins instead of toward the center, thus drawing away from the margins.

This body requires about one minute after the melting of pure gold.

After the first bake remove the investment and try in the cavity; if it has changed reburnish and go on with another bake, changing the shade as may seem necessary, and it most always is necessary. I don't take a bit of stock in the idea of an inlay changing in shade to match the tooth after being set, the only harmonizing change must come from accumulations upon tooth and inlay and are not to be relied upon.

When the baking is finished tear off the matrix, grind and polish where necessary and set with Dr. Ames' "Crown and Bridge Cement," which in my hands is the best; now grind and polish some more, for it is almost universally necessary.

GOLD FILLING—TIN, GOLD AND PLATINUM GOLD.*

By C. J. Sowle, D. D. S., Rockford, Ill.

Five years ago I read a paper before this society, selecting for my subject "Preparation of Cavities," which was published in The Dental Review in November, 1895. In that article I did not even mention that the subject had been thoroughly discussed by some of our most prominent practitioners and certain forms given to cavities, which were fully illustrated by me, after years of experience and careful observance.

On December 3rd of the same year Prof. C. N. Johnson, for whom I have the most profound respect and always did have, read an article before the Chicago Dental Society published in The Dental Review of January, 1896.

In that article he jumped on me in a most beautiful manner, which was perfectly just and right.

I am glad of this opportunity to make apology to him and any other of my professional brethren who feel that an apology is due them for apparently assuming originality of the different forms given in the preparation of cavities.

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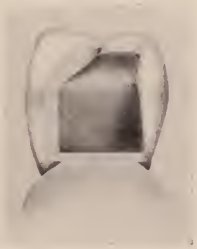
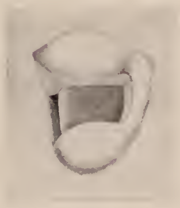
*Read before the Northern Illinois Dental Society.

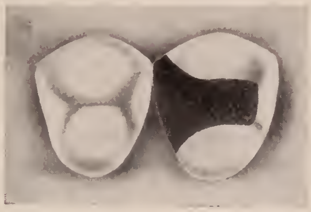
I assure you it was unintentional on my part and only due to the deep interest I hold for the advancement of my profession. Any point that I have or may be able to make clear is not done to seek fame at the expense of older and more experienced practitioners.

I hope Professor Johnson will accept this late apology when I say: "The beautiful and graceful manner in which he lighted into me sent my balloon so high I have just come down."

I have here a few drawings similar to those presented before, and hope I may be able to demonstrate to you in my clinic just what I will try to illustrate.







This particular tooth and this particular form of cavity go hand in hand; whenever I find a cavity in the mesial or distal side of a bi-cuspid this form of cavity is what it deserves and just what it gets. There are two things to always bear in mind in the preparation of the cavity indicated and has been told to us time and time again, "Extension for prevention" and to "Bevel well all margins."

After this form is given to the cavity I place the matrix in position, take a piece of separating rubber, stretch it out and force between matrix and adjacent tooth up to the cervical margin; this holds the matrix to place and yet allows give sufficient to cover well the cervical margin. After this is done I take a large enough roll of tinfoil to cover well the base of the cavity, sometimes more and sometimes less, according to the position of the cavity. I use this for its spreading qualities, placing it lightly into the cavity. This done, I use my cohesive gold, malleting well to place, building up the filling to nearly the occlusial surface, taking good care of buccal and lingual margins, finishing my filling with No. 60 platinum and gold foil.

This operation carried out as I have described will give you a filling easy to finish at the cervical margin, with an occlusal surface sufficiently hard to withstand almost any amount of masticating.

THE FRAUDULENT DIPLOMA BUSINESS.

By W. C. Barrett, M. D., D. D. S., Buffalo, New York.

The latest triumph of law over what at first seemed insuperable obstacles should fill the heart of every honorable man with devout thankfulness and hope for the future. One of the foulest plague spots that has existed in connection with our professional life has been cleansed, and certain men who have for years defied law and public opinion suddenly find themselves behind prison bars. James and William Armstrong, of Chicago, who conducted the "Metropolitan Medical College," a diploma mill of the very worst character, have been found guilty of issuing fraudulent diplomas, and at this writing are in jail for their crimes. This, with the conviction a few months ago of the men who conducted another notorious diploma mill under the name of the "Cosmopolitan Medical College," and which also figured under a number of other appellations, such as "The Illinois Health University," etc., etc., while not securing the incarceration of all the men who have richly earned a cell in prison, will, it is believed, practicaly put an end to the selling of degrees in Chicago.

It should be comprehended that, contrary to the usual belief among dentists, there never has been a fraudulent dental college. It is true there are dental schools in Chicago whose course has been little more than a travesty on dental teaching, and that some of them have been practically recognized by the State Dental Examining Board, but there has been none that granted degrees except upon an attendance that at least fulfilled the forms of the law. All the admittedly fraudulent degrees in dentistry have been granted by pretended medical schools, not one of them masquerading as a dental college.

It is a matter of astonishment, not alone to foreign dentists but to the most of the profession in America, that this infamous traffic should have so long been carried on with seeming impunity. The reasons, while not at first apparent, were sufficient to account for the disgraceful fact. In the first place, the sales were almost exclusively to men in foreign countries. England was a good customer, while Germany and Italy were close seconds. Mexico and Central America were fruitful fields, while South America, Australia and the East Indies absorbed many of the vile products. Few were sold in America, for various reasons. In the first place, most of the States have laws regulating medical and dental practice, under which these fraudulent diplomas cannot be used. Besides, the professions of America had local knowledge of which are regular and reputable schools. In foreign lands they have no such information, and hence the high-sounding titles under which these affairs conducted their business readily imposed upon their people. Of course no one who ever obtained the degrees that were conferred upon a mere money consideration could fail to understand their true character. They were deliberate parties to the fraud.

As comparatively few irregular diplomas were issued in this country, because they could not be used on account of the readiness with which they were detected, and as anyone purchasing one of them was aware of the risks he ran in attempting its employment, he himself being liable to arrest for fraudulent practices, it was almost impossible to secure conviction here. The swindlers were constantly on the watch for detectives who sought to procure diplomas in a fraudulent manner, and were exceedingly wary. They had their agents abroad through whom the nefarious business was transacted, and affairs were so managed that no one appeared personally in either the negotiations or delivery of the goods. Decoy letters did not catch them, for they scented danger from afar. Registered letters have been known to cross the ocean a number of times without finding anyone to receive and receipt for them.

That Chicago has been the headquarters for this kind of swindling is due to a vicious law of the State of Illinois, passed twenty-seven years ago, and which was honestly intended to foster legitimate business enterprises. In time it was discovered that under its loosely drawn provisions it was possible to incorporate educational institutions as commercial concerns, and thus to give them a legal status. The Secretary of State of Illinois was obliged to certify that they were regularly and legally organized, and this certificate was by them published in connection with their advertisements, while at the same time he personally knew them to be engaged in fraudulent practices. It has been found impossible to obtain a repeal of the obnoxious law without at the same time wiping out of existence and making illegal the past acts of many legitimate business enterprises. The most that could be done was to obtain another enactment that would define what was a fraudulent use of the law.

The State Board of Health of Illinois has for a number of years been earnestly seeking to suppress the irregular and fraudulent schools. Because of their regular incorporation, little progress could be made. Public sentiment was not aroused, and the people of the State were ignorant of the real condition. Few realized either the extent of the traffic or its full iniquity. After the Board of Health, the chief credit for the overthrow of the diploma swindling should be given to the National Association of Dental Faculties. Although the concerns which were selling dental diplomas were pretended medical institutions, and were chartered as medical colleges, the National Association of Dental Colleges, at its annual meeting for 1897, appointed what was denominated the Foreign Relations Committee, which was charged with the performance of certain educational duties relative to the reception in American dental colleges of students from Europe. In the discharge of its functions the committee became aware of the existence of very many diplomas in foreign countries which had never been issued by any regular college authorized to confer the dental degree, and they applied themselves to learn their source. They found that nearly, or quite all of them, emanated from Chicago, and they transferred their inquisition to that city, with considerable success.

At the annual meeting of the College Association, held in Omaha, in 1897, the committee made a report which laid bare the enormity of the traffic, and very plainly called attention to its demoralizing iniquity. It reported the names of several of these fraudulent Illinois affairs, and in no uncertain tones denounced them. The members of the various faculties listened with incredulity to the exposure and arraignment, and the report was actually amended by the association for the purpose of softening some of its expressions of censure. Even when so toned down the majority of the dental journals refused to publish it, lest they be sued for libel by the men who were even then in hiding from the law. The chief aim of the committee had been to arouse a healthy public sentiment, well knowing this to be the first essential to success in an open attack. They were aware of the embarrassments under which the State Board of Health were laboring, and strong language was used in the report that it might attract public attention.

The report, notwithstanding its partial emasculation, did that which it was intended it should do. Reprints of it were made by the committee and these were sent where it was believed they would do the most good. The presidents of the great universities of Illinois received copies, and were astounded at the extent of the iniquity that existed in their midst. They had not been fully aware of it, because, although the source of the filthy stream was at their doors, its effects were only exhibited at a distance. They at once called a meeting of the heads of the principal institutions of learning of the State, and an association for the purpose of bringing about a better state of affairs was formed. The presidents of Chicago, Lake Forest, and Northwestern Universities were appointed a committee to secure, if possible, a repeal of the vicious law under which the fraudulent affairs were conducted, and to obtain by legal enactment some system in the chartering of educational institutions that would forever prevent any further abuses of the degree granting power. The report of the Committee of the Dental College Association was read to the representatives of the schools, and extracts from it were printed and sent out almost broadcast. Its statements were repeated to committees of the legislature, and were used in the attempt to secure a repeal of the bill under which fraudulent colleges were incorporated. The newspapers took up the matter, and a healthy public sentiment in favor of the reform was aroused.

The National Association of Dental Faculties had placed an almost unlimited sum of money at the disposal of the Foreign Relations Committee, and directed it to proceed with the prosecution of the fraudulent schools. But the committee soon saw that alone it could do little. There was money in the fraudulent business, and the men who were engaged in it secured the very best legal counsel, retaining United States Senator William E. Mason, and other eminent lawyers. It is a comment upon the general ethical tone of the profession of the law, that there is nothing which forbids its most reputable practitioners to accept a fee for the express purpose of assisting in the commission of a fraud upon a sister profession—to help to break down the only barrier that forms the common boundary of all professions. The legislation introduced by the Presidents of the Illinois Universities was defeated, but the special counsel retained by the Foreign Relations Committee, under cover of that failure, got through a bill which paved the way for other repressive measures. It was early seen that reliance could only be placed on the United States courts. There was a very stringent law of Congress against the use of the United States mails for fraudulent purposes, and under this it had been possible to put a stop to public lotteries and other such illegitimate schemes. The fraudulent diploma traffic must be carried on through the mails if at all, and if United States law could be invoked, the federal courts with their United States marshals would soon hunt the rascals down.

To get the matter before these courts, the Foreign Relations Committee was powerless, but the Illinois Board of Health, to its great credit be it spoken, took the matter in hand when societies and State Medical and Dental Examining Boards seemed indifferent. They have assisted the United States marshals in obtaining the testimony necessary for conviction, have brought the matter before the federal courts, and the result has been that the worst of the offenders have been convicted and condemned to prison for one year and to pay a heavy fine. It is not claimed that the infamous traffic has been finally and forever broken up, for it is a difficult thing at a single blow completely to eradicate so profitable a vice. Perhaps some associate of the now imprisoned swindlers, who has the plates from which were printed the diplomas, may occasionally sell one when he is assured that it will not be discovered, but there is little doubt that the rascals are now thoroughly intimidated, and will hesitate before taking the chances of an imprisonment which it is demonstrated surely awaits detection.

But it will be many years before the reputation of our dental and medical schools will recover from the effects of this disgraceful business. Foreigners who are not well affected toward American dental colleges, to which in the past students from all countries have flocked, have charged upon our regular and reputable schools the crimes of these Ishmaelites, and have too often intimated that all were alike, and that American dental diplomas could be bought for money, and therefore no such document possessed any value. A prejudice against American schools and American dentists has thus been created, which has manifested itself in discriminative legislation against our graduates. It will take a long time for these impressions to become effaced, for they will be carefully cultivated by the men whose interest it is to perpetuate them. Foreigners were always more responsible for the sale of diplomas than even were Americans, for it was their eagerness to become purchasers which encouraged the business. It could not have existed on the profits derived from residents of this country. But despite this the odium attaches to America, and perhaps it is right that it should. Though the receiver may be as bad as the original thief, the same punishment is not usually meted out to him.

It is most unfortunate that the general government can do nothing toward the promotion or regulation of educational interests, save in an indirect way. Each of our nearly fifty separate States is supreme in the management of its domestic affairs. The authority of the United States courts can no more be invoked in matters reserved for State sovereignty than in affairs of foreign nations. Education is one of the interests in which each State is autonomous and supreme. Therefore, such a thing as national regulation or national supervision in either secular or professional educational matters is an utter impossibility. Any legislation on the part of Congress affecting the education of our youth would be unconstitutional, and therefore of itself null and void. A large proportion of our people are exceedingly apprehensive and jealous of federal authority, and persistent advocates of State sovereignty in everything save national defense, and hence uniformity in the laws regulating bankruptcy, divorce, property interests, and minor crimes over which State courts have jurisdiction, as well as national recognition and national uniformity in our schools, is a hopeless dream. Each State will erect its own educational standard, and such as were settled by illiterate emigrants from Europe, and those whose inhabitants have inherited their ignorance, cannot be brought up to the level of the States which have a better educational system, save as the result of long years of persistent effort. But fortunately the mails are under national management, and schemes for swindling which are dependent upon them can thus be made amenable to United States law.

A SKETCH OF DENTAL HISTORY.*

By Dr. N. M. King, Minneapolis, Minn.

Dentistry comes from the Latin word dens, meaning tooth. A simple definition would be, pertaining to the teeth. This, when subjected to serious thought, means much more than these few words may indicate.

It embraces the art of treating diseases and lesions of the teeth and supplying artificial substitutes in the place of these organs when lost. Indeed it is comparatively of late years that dentistry has occupied anything like a properly recognized position among the different departments of minor surgery. For a long time it was practiced of other pursuits, such as barbers, blacksmiths, jewelers, etc., who had little or no professional education, but who were the dentists of the town or village, simply for the superadded livelihood which it sometimes afforded them.

Even in our larger cities, up to within a few years, this state of affairs seems to have existed to a small degree, and this right under the shadow of universities and medical schools.

A partial explanation of this condition seems to be in the fact that tooth extraction constituted the major part of dentistry of those good old days, and as one of the chief requisites of this operation was strength, we can readily see how the stronger man might seem to be the better dentist in the eyes of the unfortunate patient.

Owing to these facts the dental profession of these days had but very few attractions for the medical men, and was thereby made up of the more uneducated classes, who never failed on every possible occasion to parade their specialty, as sufficient to confer a surgical status on those performing it, and thus entitle them to be designated as a *Surgeon Dentist.*

We must not lose sight of the fact, however, that as far back as 1640 there were some few medically educated men who confined their practice mostly to the teeth and gums, and who attained therein much skill and expertness.

They brought irregular teeth into line, treated diseased conditions of the teeth and gums, cleansed and filled teeth, extracted and replaced to a certain extent with artificial substitutes those which had ceased to be useful. These few were greatly in the minority, but were known and were honored as members of the dental profession.

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*Read before Minnesota State Dental Society.

When and where these terms originated seem to have been lost in the misty past.

The early history of dentistry is hard to trace, presumably from the fact that the dentist usually leads a quiet, unassuming life.

As a rule he is not called upon, as are the members of his sister profession, to take active part in public affairs. The physician is naturally a prominent man in the community, being constantly consulted as to the welfare of the public health, its water supply, etc.

The lawyer is sure to say enough to make himself prominent one way or the other, and the clergy have in charge, as their special province, matters which to many seem of far more importance than either life or health.

For these reasons the history of these professions and of many who follow them are well preserved in readily accessible records, while most records of our own profession, if any such were ever kept, have been hidden away in the archives for safe keeping, and, what is more, are still there.

As near as we can find out dentistry seems to have originated in part with the so-called company of barber surgeons of England, which was incorporated by Edward IV. in the year 1461. In 1540 the name of this company was changed to the company of Barbers and Surgeons, and according to an act of Parliament the only surgery the barber was allowed to do was the extraction of teeth. In 1745 the barbers and surgeons separated, and the surgical element formed what was then known as the Surgeons' company in the year 1800. This gave place to the Royal College of Surgeons of London.

During this entire period, and up to 1840, the dentistry of England remained in a rather embryonic state, but now (1840) its condition seems to have attracted the attention of the profession, since, after much consideration, some anxiety was manifested by its more learned and respectable members, to be recognized in the new medical act of 1843, which was then being introduced by Sir James Graham.

Now and later, however, the fully qualified medical men made strong objections to the partially qualified man footing with themselves. This brought about a diversity of opinions from which arose three distinct factions.

First, those who desired to see all dentists fully qualified surgeons. Second, those who would require them to have only a certain amount of surgical knowledge, and lastly those who advocated the dentist as being entirely disassociated from the surgical profession, and to have a college and diploma of their own.

Complications and difficulties from these different opinions arose, were put aside and their places taken, until finally, in the year 1858, the Royal College of Surgeons of London prepared a curriculum which, when completed by a student, entitled him to a dental certificate, thereby representing him to be a dental surgeon from this college. This was the first special dental course to be recognized by any college of medicine or surgery of London.

Now let us look into dentistry of our own country. The first advent seems to have been in Boston. In 1636 the Plymouth Company, an association organized for the purpose of colonizing that section of the country, sent out from London to Boston a number of physicians, an apothecary and three barber surgeons. Of the three barber surgeons there is scarcely no professional record to be found. The name of one, however, was Wm. Dinely, but he seems to have been unfortunate. In 1639 he was sent for by a man of a neighboring village who was suffering from the toothache. He started on his mission of mercy, being accompanied by the person who brought the message. They were overtaken by a violent storm, lost their way, and were found a few days later frozen to death. His misfortunes have preserved his name to posterity. The next dentist of whom we find record was Isaac Greenwood, Jr., also of Boston. His grandparents came from Norwich, England, in 1650.

The first mention of Greenwood, the dentist, was brought to notice by a newspaper account of the Boston massacre of March 5, 1770, in which he is described as being an ivory turner, a business naturally embracing that of the dentist. Dr. Chapin A. Harris refers to him in his dictionary of dental science as being the first practical dentist of Boston.

Of Isaac Greenwood's five sons three became dentists, of which two, John and his younger brother William, will ever be remembered for their good works as pioneer dentists of the United States.

The following is a brief biography of their lives:

John Greenwood was born in Boston in 1760. He attended school until his thirteenth year, when he was apprenticed to his uncle as a cabinetmaker of Portland, Maine.

Two years later the battle of Lexington brought the strained relations between England and those of her American colonies, now embraced within the United States, to a crisis. A peculiar train of circumstances led young Greenwood to enlist in the American army, rapidly gathering near Boston, and shortly after, at Bunker Hill, he received his baptism of fire. With his company he assisted to cover the retreat of that patriot band whose defeat brought no disgrace to the vanquished and gave no comfort to the victors.

Later he took part in that first and most disastrous campaign in Canada, and ended his army career, his term of enlistment having expired, immediately after taking part in Washington's masterly surprise of the Hessians at Trenton. He enlisted as a fifer, a position which exempted him from many hardships and dangers, but of this he took no advantage, but manfully did his full duty as a soldier. After a few weeks' rest at his father's home at Boston he entered the naval service as privateersman, and in various capacities served therein until after the war.

We now find him in New York City, almost penniless, and refused assistance by his brother, Clark Greenwood, who was practicing dentistry in the city at this time. Through the favor of a friend he began business in a small way as a nautical and mathematical instrument maker with promising success.

A mere chance changed his attentions to dentistry, and developing therein exceptional skill, he soon acquired a large and lucrative practice.

John Greenwood, when he performed his first dental operation, "if the extraction of a tooth may be so termed," was a skilled mechanic. So satisfactorily was this extraction done that the patient, a physician of repute, asserted that he never had a tooth removed so carefully or with so little pain, and declared that he would thereafter recommend to him any of his friends, or patients requiring a like service.

In a little while so promising seemed his new vocation that he sold out his business and resolved to devote his whole time and attention to dentistry, determined to make himself a master of his calling.

Passing beyond the usual limits of dentistry he boldly entered the domain of oral surgery, and acquired fame in successfully treating by novel surgical procedure diseases of the maxillary sinus. He was a type of the men who have made illustrious and honored the dental profession of the United States. He made the most of his limited education and with unflagging zeal and untiring energy he reached the well merited and recognized position of being one in the foremost rank of his position.

William Pitt Greenwood, younger brother of John, was also a turner of ivory. After spending a short time in New York City assisting his brother he located in Salem, Mass., as a dentist in 1790. A few years later he removed to Boston, continuing in his dental practice until incapacitated by age. He early acquired a reputation as a skillful carver of bone dentures, and practiced so long as the fad lasted; he received the honorary degree of D. D. S. from the Baltimore College of Dental Surgery.

During his long professional career he maintained and enjoyed an excellent reputation and practice.

At about this time another Boston lad, Josiah Flagg, comes to our notice, who by his record of good works will ever occupy an honorable position in the annals of dentistry of America. I simply make mention of him here and will return to an interesting period of his life later.

We must not forget the important part France has played in the dental profession.

Francis the First was very ambitious to make the capital of his domain a literary and scientific center, and by the untiring efforts of himself and also his successors Paris now has the distinction of being the metropolis of the scientific world. In Paris modern surgery was born, and at its birth, that we know at present, received its first educational impulse. Let us go back to the year 1525, when Ambrose Pare arrived in Paris, to begin his wonderful career by an apprenticeship to a barber surgeon. At this time, as we know, the barber surgeon embraced dentistry in his work. Pare early showed a disposition to master the more important features of his art, and while still a young man his ability was recognized of the captain-general then commanding the French forces, during the campaign in Piedmont in 1537, receiving from him a commission as master barber surgeon. In this position he found opportunity and encouragement to introduce those reforms in surgical practice that have earned for him the well merited title of the father of modern surgery, and he also merits the title of foster father of modern dental surgery.

Compared with the dentistry of the present, the dentistry of his day, although crude, was far more advanced than was the general surgery of 1537 compared with that of 1895.

He proposed treating wounds with supporting bandages, controlling hemorrhages by ligation, and assisting nature with soothing applications, in the place of the time-honored actual cautery and boiling oils. He contemptuously threw aside his whole array of searing tools and entered upon his work armed only with bandages and a few simple emollients.

His methods of treatment met with unbounded success, and the old advocates of radical treatment of actual cautery, etc., were gradually forced to bow to his superior wisdom. He wrote several books on surgery and surgical practice, and included therein the practical part of dentistry. He lived to see his work appreciated, his methods generally adopted, and the science he loved placed upon a scientific basis. He died in 1590, honored and respected by all.

The work so well begun went steadily on, and toward the close of the 17th century the surgeon and dentist had so far separated from and advanced beyond their former companion, the tonsorial artist, that they began to claim an equal with the profession of medicine, and after a hard struggle they gained their point. During this contest the surgeon and the dentist fought side by side, and at its conclusion in France the dentist-surgeon and the physician became professional brothers.

Then and there, possibly for the first time since the dark ages, dentistry assumed the place she has since held, ever recognized and unchallenged, a science among sciences.

In about 1700, any person to become a member of the dental profession in France was compelled to undergo a regular examination, the same as surgeons and physicians. From this time on dentistry assumed in France an importance which it had nowhere else on the globe. The dental profession there stood shoulder to shoulder with the learned professions of the day, and received with them equal recognition and appreciation.

The barber surgeons seem to be the nucleus of dentistry of all nations. It is quite probable that he drifted into dental practice from his position as public valet as a beautifier of the person, for, as we know, from hair-dressing to cleaning teeth is but a single step, "and in some cases it seems to be a step in the retrograde direction." The gentlemen of leisure of the olden times would have his morning shave, his wig brushed and powdered and his teeth cleaned and polished at the same time, and in the same shop. As evidence of this we are cited to an advertisement in a New York paper, in 1766, which reads: "James Danial, wig-maker and hair-dresser, also operator upon the teeth."

Now let us see what effect the dentistry of France had upon the advancement of dentistry of our own country, and in what way.

About the time of the revolution, Dr. Franklin went to France to procure aid. His mission proved a brilliant success, and he secured from her that material and moral aid which the struggling colonies so badly needed at this time.

With the land forces sent to our aid was a young officer named Joseph Le Maire, a dentist of Paris. With the French fleet comes James Gardette, a naval surgeon, on his first cruise, a man whom the dentists of Philadelphia will ever hold in grateful remembrance. He did much to make dentistry in Philadelphia what it now is. He was educated for the medical profession; when he resolved to enter the navy he found it imperative to receive instructions in dentistry, which he accordingly did, from a distinguished dentist of Paris. He also procured dental books and tools, these being part of the required requisites of a French naval surgeon of 1777. During the winter of 1781-1782, the war being virtually over, we find the French and American armies in their winter quarters side by side, near Providence, R. I. In that camp, in intimate friendship, are Joseph Le Maire, James Gardette and Josiah Flagg, of whom we made mention as among the early dentists of the United States.

Le Maire did a great deal of operative dentistry upon different officers and soldiers of the American army, and Josiah Flagg became very much interested in the work and proved himself an apt student. Gardette also embraced the opportunity to add to his knowledge already acquired.

From these facts we can see that it needs but very little stretch of imagination to locate the first school for dental instruction, and the first dental meeting for mutual improvement in the United States around this *revolutionary camp fire.* Not only did those of the army have opportunity to observe and receive the benefits of skilled dental services, but the quiet condition of the armed forces brought many distinguished persons from all parts of the country who had like opportunities.

When the army disbanded, the merit and advantages of dental services were made known far and wide. Now Josiah Flagg, being free, returned to Boston, where he began the practice of dentistry, and his tireless efforts to be at the front in his profession has made him one of the foremost dentists of his time.

From this time on the dental profession of the United States took a rapid climb, until now we rank second to none in the world as to proficiency and progress. And the dentists of today are beginning to realize more and more that diseases of the teeth and gums are not always mere local affections, but they may, and very generally do, arise from constitutional causes, and that the morbid condition of the system, which leads to the disorders of the dental tissues, are various and dissimilar in their nature, and the exact connection between such morbid conditions and said dental tissues are of a very complicated character, and it is owing to these facts that the dentist of today finds it necessary to equip himself with much of the medical profession. It seems to me that the time is coming in the very near future when our requirements shall be equal to those of the practicing physician, or, in other words, *dentistry will be a specialty in medicine.*

Should this time ever come, let us welcome it as another step of advancement for our beloved profession.

CAVITY PREPARATION.*

By C. N. Hoagland, D. D. S., Elgin, Illinois.

I have been thinking whether or not I would have had issued a proceeding for contempt against Dr. Chappell for putting me in this position (that of writing a paper), something I never did before in my life and which I solemnly swore I never would or could do.

I have never quite forgiven our Honorable President for jerking a live pulp from a lower molar for me when I was too young to strike back, so when he rushed into my office one morning and informed me that Dr. Perry expected to hear from every one of us and told me to be prepared with a five-minute paper on this subject,

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*Read before the Northern Illinois Dental Society.

I refused, but Dr. Chappell does not know the meaning of the word no, or is very hard of hearing and thought I said yes, I would. He then told me how pleased Dr. Perry would be to hear from all of us. Now, I didn't like to disappoint Dr. Perry, for he was kind enough to give our class of '97 of the Chicago College of Dental Surgery a lecture on soldering. After I had spent one entire afternoon in burning up brass crowns as fast as I could make the bands and swedge the caps, I sent a note down to Dr. Perry at lecture time asking him to give us a lecture on soldering.

He smiled, read the note, and then aloud to the class, and said: "My assistant says, 'Soldering is the application of heat,' and I guess he's about right."

I asked Dr. Chappell what I should write and he said: "Write just the opposite from what any one does in practice, so as to cause a discussion and have things interesting."

We are taught at college, and I guess everyone does the same, to first adjust the rubber dam in the preparation of a cavity. Second, break down the weak over-hanging enamel walls with a sharp chisel and remove loose decay with proper excavators.

Dr. Black and Dr. C. N. Johnson, and all good operators, today believe in extension for prevention.

You have all probably noticed, in the anterior teeth especially (also in bicuspids and molars), interproximal cavities at the gingivo-labial and buccal and gingivo-lingual and the incisal angles, that in these regions the teeth are not kept clean by the friction of food in mastication.

The remedy lies in so extending the outlines of the cavity that the margins are carried to a point where they will be kept clean and its observance must be insisted upon where the most permanent work is required. After frail enamel-walls have been broken down and the margins extended to the desired outline, all decay removed, the cavity should be given such form that the filling will be retained securely in place. Interproximal in molars and bicuspids with a flat base and no starting pits, properly dove-tailed and enamel-walls properly beveled, I proceed with anterior teeth, interproximal cavities, by having base arched, to avoid exposure of pulp and make retaining points as far from the pulp as possible.

In every instance where possible, the margins should be so extended as to leave the enamel well supported by dentine and wherever this cannot be done the enamel should be freely beveled and the gold built over it in such a manner as to protect it. Enamel protected in this way with care and skill, will remain intact in ordinary positions, and yet this does not alter the general rule that enamel is safest when supported by dentine.

The age of the patient has a great deal to do with the forming of your cavity, in the anterior teeth especially. If you can put in a good gold filling in any of the anterior teeth of a patient in middle life without showing any gold I believe it good policy to do so. (Your patient will run the risk of recurrence of decay.) But if, on the other hand, your cavity is so formed as to allow the labial margin to show, it should be extended labially so as to show distinctly.

The reason for this is, that when gold is placed between teeth in such a way that it is in the shadow, the appearance a few feet distant from the patient is that of a black mass simulating decay.

Dr. C. N. Johnson says: "We should never jeopardize the nervous system of our patient in order to carry out some heroic theory," and furthermore, "the operator's attitude towards the practice of extension should be to aim always at the most ideal and permanent form for his cavities, and in every instance where he deviated from this, it must be only on account of some well-defined reason for so doing."

PROCEEDINGS OF SOCIETIES.

Chicago Dental Society.

A regular meeting of the society was held in Schiller Hall, December 4th, 1900, with the President, Dr. George W. Cook, in the chair.

Papain as a Pulp Digester.

Dr. A. W. Harlan: I wish to make an announcement for the purpose of presenting it to this society, because the matter I am going to speak of I consider of such importance to the dental profession that it should be as widely spread as possible at this time. Some of you may know that for the past two or three years I have been experimenting with papain for the purpose of digesting the dental pulp, and in furtherance of that series of experiments I read a paper in Paris on "Pulp Digestion," presenting it to the profession of the world in that way, and as the paper will not be published for some little time, I thought I would tell you that the experiments have gone so far that I feel certain of the results.

Papain is obtained from the ordinary papaw, or carica papaya, and comes in a white hygroscopic powder that is soluble in water, glycerine, acids and several other substances, and it is absolutely non-poisonous. It is not a coagulator of albumin, and it is a perfect digester. In the experiments that I have made out of the mouth and those in the mouth papain has already been proven to be an absolute and positive disintegrator of the pulp. Here is the formula: Take one grain of papain, a drop of pure glycerol and a drop of 1-300 hydrochloric acid, and mix them together in a paste, and apply it to the dead pulp in a tooth. Mind you, I said a dead pulp, and I do not mean one that is one-half or three-quarters alive. The paste can be sealed in the tooth with oxysulphate of zinc, oxyphosphate of zinc or with gutta percha, and if left in the tooth for a sufficient length of time it will absolutely digest the pulp, disintegrate it, convert it into a jelly-like mass, which is easy of removal from the pulp chamber and pulp canals. This is a method that any of you can try. I would advise you in doing this, after you have destroyed the pulp with arsenic, cobalt or any other corrosive, to simply wash it with a slightly acidulated solution of water, either acetic acid, trichloracetic acid or any other acid, and then apply the paste directly to the remains of the pulp in the tooth, seal it and leave it for one week, two weeks or three weeks, according to the bulk of tissue to be digested, and you will find that you can remove it from the most attenuated and delicate root canals that are found in the human mouth.

The object of these experiments, you must know, is to get rid of the necessity for much instrumentation, and much labor and pain to the patient, from the fact that the pulp of the tooth occupies the whole space of the root canal, often for a considerable period after it had been destroyed, and the mere contact of a fine instrument with the dead pulp will cause pain beyond the apex, however difficult of access, and all the other difficulties with which you are familiar. The only reason I present this matter tonight is that any of you may try it as opposed to pulp mummification, which in my judgment is an absolutely unscientific process as at present practiced. My idea is that the pulp of a tooth, after it has been destroyed, must be removed in order to maintain that tooth in a sanitary condition. If you can remove a pulp so as to get the root filled, you have the best reason for believing that the tooth can be saved indefinitely.

Dr. W. C. Barrett, of Buffalo, N. Y., read a paper on "The Relative Duties of the National Board of Dental Examiners and National Board of Dental Faculties."

Dr. R. Ottolengui, of New York, and Dr. J. N. Crouse were assigned to open the discussion upon this paper, but as these gentlemen were absent, Dr. L. P. Haskell was asked to do so.

Dr. Haskell said: I am unable to discuss this question. I have been much interested in the paper of Dr. Barrett, which was certainly well prepared and well put. I may say, however, that I can endorse everything that he has said. I believe there are those present able to discuss it. Of course, I have seen the progress that dentistry has made all these years, and know about the status of the dental profession at the present time.

Dr. G. V. Black: I came here with the notion of taking no part in the discussion of this subject, but, like most of you, I was interested in what might be said. It is a very important subject, and one that should be studied carefully by every dentist. The subject of dental legislation is comparatively new. It has only been a few years since it began to be made effective. A wonderful amount of good has been accomplished in the short time that our dental laws have been in existence. Dental education has been vastly improved through the working of these laws. Men are now entering the dental profession through the schools instead of through a very limited experience obtained in offices as they did before, usually, and dentistry is better. While all this is true, and while the schools have gained a wonderful impetus under the influence of these laws and great good has been done, there are many things of which to complain. Legislation has not been of the wisest, and we feel sure that that is the case. The appointment of boards has not always been of the wisest that could have been made, we think, and we believe that some other means of appointing boards, or placing the power elsewhere than where it is now lodged in many of the States, would be better. This question has to be worked out; it requires time, and in my opinion the progress that is being made is good and wholesome, although there are many things, as I have previously said, of which we have to complain. Unfortunately, for this particular kind of legislation, questions of State rights come in, and it makes it almost impossible for us to have uniform laws affecting the whole country. It is unfortunate for educational legislation, for I think it would be better in this matter of professional education particularly if we could have a national law under which all could work. It would be wise if we could secure uniform laws in the various States, so that the working out of these problems would be similar everywhere. I think we should work to that end, as far as possible. I am somewhat acquainted with the New York law; it is probably the best that we have thus far. There are some objections, however, to it that might be mentioned. There are serious objections to almost any of these laws, so far as I know. But time will improve them, and if the dental profession will work as one man for the improvement of these laws and for the improvement of dental education, the fitting of men to practice, we will very soon be in good shape. There is no other profession better organized to-day in the United States than the dental profession. The central body of the dental profession is one of the strongest bodies in the world, that is, the National Association of Dental Faculties. It has more power to-day than any professional body in other professions.

Dr. A. W. Harlan: I do not like to take up the time of the Society needlessly. You all know that I am connected with a dental college, although I do not think that will affect my views on this or any other subject.

The paper that has been presented by Dr. Barrett tonight was entitled "The Relative Duties of the National Board of Dental Examiners and National Board of Dental Faculties." One of them is a purely voluntary movement with authority, and the other is a voluntary movement without authority. The National Association of Dental Faculties is a voluntary body, but it has the power to discipline its members and to make rules and regulations from which there is no appeal; while the National Association of Dental Examiners is simply an aggregation of delegates from Boards of Examiners, having absolutely independent existences, and with no definite, uniform, mutual, positive policy, because the law in one State permits the Examiners to do one thing, and the law in another State permits them to do another thing, and consequently anything that they may do can be undone just as soon as the members of the State Board get back into their own State.

The progress of dental education and of everything relating thereto dates back only to the formulation of laws regulating the practice of dentistry, because the National Association of Dentists in the United States did not have the power and did not have sufficient force to cause prospective future dentists to enter dental colleges, and the passing of laws in different States compelled them to go to college.

Any one who is acquainted with the history of dentistry in this or any other country, or throughout the world, must know and must appreciate the vast strides that have been made in the past thirty or forty years. In Great Britain they did not have a law regulating the practice of dentistry, or one recognizing dental surgery, until 1878. And in France there was no dental law that was operative, regulating the practice of dentistry until 1892. In Germany the rules and regulations pertaining to dentistry and dental surgery were mostly of police supervision up to somewhere about 1872 or 1873, and the duty of looking after illegal and unregistered practitioners, etc., now devolves upon the police bureau, magistrates, and agents throughout Germany. Systematic dental education does not date back as far as 1839 by any means. The dental education given in the Baltimore College of Surgery, the Ohio College of Dental Surgery, the Pennsylvania College of Dental Surgery, etc., prior to 1860, did not comprise as much as is given now in one-half of the regular Freshman courses. Dr. Barrett and Dr. Black know that this is true. The real modern dental education in the United

States did not begin truly until somewhere about 1880, that is, about twenty years ago. Look at it now! We have college buildings; we have infirmaries; we have long lists of competent graduates, and we have men who are writing books and experimenting and doing something to make our profession great and glorious. It is one of the most energetic, industrious, and hard-working professions on the face of the globe. I venture to say, that every man and woman in this room spends more hours daily working actually than any physician, lawyer, architect, or anybody else, and their business and profession cling to them. During the evening they think about it, and the next morning they say to themselves, "We have got so much to do today." They take hold of everything that is new and promises to be useful, and they apply it to practice. If one man is not capable of evolving new ideas or making inventions, just as soon as something comes out, of value, the profession takes hold of it. Dentists subscribe to dental journals and buy books; they read and associate with one another, and we have more dental meetings in the United States in the cities and different States than they do in any profession in proportion to our number anywhere. You all know that this has nothing to do with the duties of the National Board of Dental Examiners and the National Board of Dental Faculties. But the business of the National Board of Dental Examiners is to look after the carrying out of the law as it was intended to be carried out, and that is to see that illegal and irregular practitioners do not gain a foothold in the community, and to absolutely frown upon and discountenance and do everything they can to stamp out fraudulent institutions and to take it upon themselves to personally investigate and not do anything by hearsay. On the other hand, I think every reputable college owes it to itself to see that every department in the school is taught right up to the mark, and that if they have poor men they must be thrown out, no matter whether relatives are members of the Faculty or not. I would not have nepotism in a college. That is the way I feel about it. The colleges owe it to themselves to present the newest and latest thought to students, and the Examiners owe it to themselves to do the right thing with regard to the community interested. They are not appointed to regulate colleges that have a legal, moral and scientific standing. That is not a part of their duty. I would place the appointive power in the hands of the Governor of the State, and have the law so amended that when a man is appointed for a certain length of time, if there should be a change in politics, he should not be removed. I believe in keeping competent men in these positions until they become saturated with the importance of their duties. I have been on the Illinois State Board of Examiners two or three times. I was on the first Board with Drs. Black and Cushing, and we had a very good Board at that time. We were all enthusiastic, and at that time the law was poor as compared to the one we have now. The Boards have been good, but men sometimes bad. We must have intelligent men, men of sufficient breadth to comprehend what a few written lines mean, and not take the narrowest possible view of things.

I desire to thank Dr. Barrett for the pleasure of listening to his admirable paper.

Dr. L. L. Davis: This is a subject I am very much interested in, but to discuss the paper of Dr. Barrett intelligently would require considerable study of its contents on my part. I have personal views regarding this subject, but I must say that I am heartily in accord with many things that have been said by the essayist. There must be some change in legislation; some new method of controlling illegal practitioners, and stimulating the schools to higher ideals must be brought about. One body should not be under the absolute control of the other, but the two—or three—bodies should act in unison. Dental legislation in Illinois is not by any means as far advanced as I would wish it, but if every member of this Society would only do his level best, working along the lines that have been outlined by Dr. Barrett, I believe we could soon obtain a law approximating the ideal of every sincere member of the dental profession in the State.

Dr. Truman W. Brophy: I want to say a word or two in reference to Dr. Barrett's paper. In the first place, it strikes me that it is unnecessary to call the attention of Examiners to their duties. Every State that has passed a law regulating the practice of dentistry has made the duties of the Examiners clear enough, so that anybody who wishes to read them may do so, and they can then find out what the duties of the Board are in any State. Some State Boards do not seem to understand their laws; they do not seem to know what they are required to do by the act of the Legislature which created the Board and which enacted the law. If they read the laws and find after executing them that they are not getting the results that they hoped for, they should go before the Legislature, have a new bill introduced, or the old law amended to meet the requirements of the case. The dental law of the State of Illinois specifies that the Board shall do so and so, and if they do not comply with the requirements of the law, they are not doing their duty. We might as well ask, What are the duties of the Board of Warehouse Commissioners, appointed in the same way by the Governor, or, What are the duties of the Board of Pharmacy, or of the State Board of Health? The law states exactly what they shall do. Let them do it, and no more. If they go further, they are not complying with the requirements of the law, they are attempting to legislate. That has been demonstrated conclusively by a decision of one of the most able jurists the United States has ever produced. The National Board of Dental Examiners is not a stable body. The next year they will have nearly a new body of men, because these Boards are subjected to change by the new Governors. Next year we will have new Governors in the different States of the country, and they may appoint new Boards. Let the new appointees know something about what their predecessors have done. Of course, they will carry certain ideas into practice; they will read the rules of the Board; they will have peculiar ideas, and they will try to do this and that, but they must comply with the requirements of the law. The National Board of Dental Examiners cannot enact rules that will be binding upon the various States, because these States cannot observe them; they must comply with the law of the respective States provided for them, and a body, meeting as that body does, cannot change the laws. We cannot have a universal law that will be operative in all States, because it is not in accord with the Constitution of the United States. States may make any laws they please, but the time will never come when one law will be operative in all the States of this nation. We may as well accept that situation now and discuss it no more. No two Legislatures will enact the same law, and such laws are not to be found on the books regulating the practice of dentistry. There is some marked difference between our dental law and that of Indiana, and so on throughout the country.

As to the duties of the National Board of Dental Faculties, they are pretty clearly defined. Of course, there are some things in the records that might be improved. Mistakes are made, and things need regulating, and something must be done quickly to hold that Association up to a high standard. I do not pretend to discuss a lot of matters that might be better considered in that body. But we must get together and not have any more foolishness about the respective duties of this and that body. Each body knows what its duties are, or ought to know, and I believe each body will carry its duties out. When they come to understand their duties better, and when we have gotten our differences settled, we can meet and discuss these matters in an informal way. If these matters were discussed informally, and then later in our National bodies there would be very little difficulty. I think the time has come when we are getting closer together. One of the greatest difficulties about the National Board of Dental Examiners is that it is not a permanent body. It cannot be permanent under the present arrangement. We go to the meetings of the National Association of Dental Faculties, and we see the same men year after year. Some men have been connected with this body ever since it was organized in 1884. They never miss a meeting, and they are interested in everything that is being done. If anything comes up concerning the past acts of the body they know all about it. But how is it in the National Board of Dental Examiners? At the last meeting I believe there were thirteen States represented, although I am not positive as to this number. I do not think there were five colleges out of the fifty in the Association that were not represented. So there is a vast difference. It is the earnestness and loyalty to the cause of dental education, an earnest desire on the part of educators to carry along their work, to be in touch with every step that is being made, that prompts these men to set aside their professional and other affairs to attend these meetings. Some of our great States were not represented in the National Board of Dental Examiners, although some of its members lived within a few hours' ride of where the meeting occurred. I know representatives of the National Association of Dental Faculties who traveled across the continent, making a trip to and fro of eight or nine thousand miles, in order to attend these meetings. They attended the meetings because they wanted to know what was going on, and in order that they might keep the school they represented up to the standard and to keep in touch with all other schools. The schools are earnest in this work, and the members of the faculties who attend these meetings are eager to gather any information which will be of advantage to the schools they represent, in order that they may go home and put it into operation.

There is one important department, which has never been taught systematically in a college of dentistry, but which should be taught, and that is physical diagnosis. I believe every student who attempts to practice dentistry and makes use of the agents we are obliged to use in the treatment of patients, particularly anesthetics, should know the physical signs, the pathological conditions of the heart, lungs, kidneys, and of other important organs. We have been very fortunate in getting along as well as we have without legal complications, without being charged with a lack of knowledge. If the question was put to a graduate or young practitioner in dentistry: Do you know whether this man was suffering or not from any malady that contraindicated an anesthetic, what is he to say? Were you trained in physical diagnosis? No. Why should not dental students be trained in physical diagnosis? I am of the opinion that this is an important part of the college curriculum, and one that will soon be put into operation and adopted generally throughout the country.

I am glad Dr. Barrett came here and read this paper, for there is so much in it to study. I know every progressive man who is connected with the National Board of Dental Examiners, the National Association of Dental Faculties, and who belongs to a State Board, will read the paper with interest, and he will profit by reading it. He will be able to consider his duties from a different standpoint altogether from that which he has previously understood them.

Dr. J. G. Reid: It is very hard for me to sit still and listen to this paper without dipping my oar in. The paper in some particulars is amusing, as well as instructive. The most important criticism which I have to make is that this Society requires that a synopsis shall be given of a paper in order that it may be discussed intelligently, and I regret Dr. Barrett did not do this, so that the members could look it over and be prepared to discuss the paper. A paper so full of good meat as this one is loses its effect in a measure by the author failing to present a synopsis of it. We lose a great deal by not having something to guide us as to what was being said. Then, too, the writer is a rapid reader, and on this account he covered the ground so rapidly that many of us lost some good points, and there were others we could not fully comprehend on account of rapid reading.

I have known Dr. Barrett for a good many years; I have talked with him personally more than once upon this and kindred subjects, and he is a criticizer from the bottom of his feet up to the top of his head. If he does not think one is right in any particular, he does not hesitate to tell him so. I am very much the same in that regard, and if I do not think he is right in the discussion of any question, I have a right to express myself publicly accordingly. About five hours ago the essayist told me to my face that I did not know how to examine a dental student at the present day. I am not here to say that I do not know how to examine a student, but I am here to express my opinions regarding this subject. I have a certain duty to perform, and to the best of my ability I am trying to perform that duty as a representative appointed by the Governor of this State. I am trying to serve my profession honestly, and although I may not be the most competent man to examine the qualifications of students, I do believe that I am posted somewhat upon what the colleges are doing. I am not sitting around all the time and not reading about what is going on. I know something of my profession outside of the mere plugging of a tooth. I know how our profession is advancing. I am thoroughly in accord with a great many things the essayist has said, and he has brought out some excellent points. I believe dental examining boards should be appointed without regard for political influence. Our examining boards today are a political hodge-podge. That is what they are. I am speaking now of dental examining boards generally, and I am not pointing out any particular board. These boards should be taken out of the hands of politicians. I do not know how to do that, nor am I here to suggest to you how it can be done. I am here only to ask you what can we do, and what is the best thing for us to do. Who shall be the judges of the men appointed on dental examining boards? Shall their appointment be governed by what I have to say, what you have to say, or shall it be by somebody who knows nothing about the interests of the profession or of the people? Dr. Harlan has told us that he happened to be a member of the Board a few years ago when it was organized, and when Dr. Black was on the Board, and they had a very congenial Board. It was the best Board the State of Illinois has ever had since the existence of the dental law. I am proud to speak of it. But I would have Dr. Harlan to understand that the conditions they had to contend with when they were upon the Board were entirely different from what they are today. There is no comparison whatever in any way, shape or form, of the conditions that existed then as compared with those that exist today. That was twenty years ago. The dental colleges have advanced considerably since that time, and what did the Board have to do twenty years ago? I have had the pleasure of delving into the archives of the dental Board from its early existence to the present time; I have gone over the records of the first dental Board that was in existence, what it did, and what the dental Boards are doing today. I have taken some interest in this matter, and the actions that were taken at that time (twenty years ago), and what they did then, as compared with the actions of today, would surprise most of you. You would be very greatly surprised to read the records of the Board of twenty years ago, and then read the records of the present Board. It is a wonderful comparison. As a representative of the Board of this State, I have no apologies to offer to this Society—none whatever. I am here to tell you that my efforts have been directed towards the interests of all concerned, and I make no apology for anyone else. I am not pleading authority in any sense. I desire no charity. I shall, as long as I am in that capacity, strive for everything that is good, but I cannot do it alone.

I wish to express to Dr. Barrett the utmost pleasure that I have had in hearing his paper, and when it is published I shall read it more than once.

Dr. C. F. Hartt: I wish to state that it was not an accident in appointing Dr. Harlan a member of the Illinois State Dental Examiners. Several dentists, including myself, were the means of having Dr. Harlan elected on this Board. I had the honor myself of taking a paper around and securing a hundred and twenty-five signatures of the best dentists in this city and State, asking the Governor to appoint him on that Board. The dentists at that time took an interest in the make-up of the Board, and they knew that if Dr. Harlan was appointed they would get the right man.

Dr. Edmund Noyes: The first function of dental legislation is, to my mind, pretty well accomplished. The next thing to which legislation needs to address itself is a far more difficult proposition, and it is not surprising that the first tentative efforts should engender some opposition and strife. The first thing that dental legislation sought to do, and very thoroughly accomplished, was to break up the practice of private pupilage, and send dental students to the colleges. The value and importance of that work I shall not disparage or underestimate. It is beyond estimation in its value to the profession and to the public. Dr. Barrett suggested in his paper that no organizations could wisely and wholesomely be left without some check, supervision, and authority over them. The time has come (it has always been present, only that too many things cannot be done at once) when the education of dentists in schools needs some supervision, some stimulus, and some pressure brought to bear upon it from outside of the schools themselves. The Association of Faculties has done a wonderfully good work, but it is questionable in the minds of some of us whether it is not at the present time in danger of being dominated by the smaller, weaker, and poorly equipped schools, because there are more of them than there are of the good ones, and it is numbers that count in a ballot. The entrance requirements, the supervision of equipment, the quality of the instruction, and thoroughness of examinations should be carefully looked into. How this can be brought about is a question that I would like very much to answer, but I cannot. It is of little use sometimes to point out a thing that needs to be done. It is much easier to do this than to point out how to do it. The efforts that have been made hitherto are along two lines, one the examination of graduates by the State Boards, and the other the authority given to the State Boards to determine the reputability of schools. Neither of these has proven very satisfactory or effective hitherto. Both of them are surrounded by almost insurmountable difficulties, and whether any better plan can be devised, or whether these can be so administered as to diminish the friction and increase the efficiency of them, I am not able to say, but I sincerely hope so.

Some of us were much disappointed, and witnessed with very great regret the controversy some time ago between the National Board of Dental Examiners and the National Board of Dental Faculties upon the question of entrance qualifications. It seemed exceedingly desirable that those two bodies should have co-operated with equal strenuousness for the accomplishment of the end which was sought. It seems to me, that if we are to maintain the practice of dentistry as a profession, it is time that we should require of those who begin the study of it more positive and more extended mental training and scholarship than are now required by our average dental schools. It is necessary chiefly and urgently because of the nature of the teaching that we are attempting to do in the schools. It is not possible to take a boy out of the eighth grade, give him a microscope and a text-book of dental histology, and have him competent to learn as much about that subject as any dental or medical student, or any young man who expects to understand pathology, ought to be taught. He has not the training that enables him to take that sort of instruction. The same is true of several other things besides histology. These things, gentlemen, are very important. I do not wish to stand in the attitude of a pessimist for a moment. I realize the great things that have been done for dental education, and I honor most highly the men who have accomplished them; it is only that at the present time we are more than usually in a transition period, a time when advanced steps need to be taken in the right way and wisely. For instance, it is far more important to the welfare of the dental profession that one or two years should be added to the minimum requirements for entrance, than that a year should be added to the course in the dental schools. It is easier to obtain the fourth year in the dental school, because there are a great many urgent motives which impel it, but which do not operate in the other direction. But the other is far more important, to my mind. If we cannot have a high school course before entrance, by all means let us have four years in the dental schools, but two years more before entrance would be better than one year more afterwards in making the character of the profession. Take a large proportion of the students in our Freshman classes, and it means that if they are old enough to be twenty-one when they graduate, most of them must have spent a number of years, since they were out of the eighth grade, or out of the first year in high school, or even out of the second year in high school, in some mechanical or mercantile pursuit, and they come to us with the whole habit and thought and atmosphere of their lives impressed from a mechanical or commercial aspect. It is not half so easy to get such men into a professional atmosphere, to get them to think professional thoughts, as distinct from business thoughts, to make professional men of them instead of business men, as it would be if we were to take them at the end of four consecutive years of school-life. It is one of the hardest things. I know, because I have been talking about it to students. It is hard to induce students or even practitioners to assume the character and attitude of professional men rather than business men, and the future of the profession is in urgent need that these professional feelings and thoughts and standards should be more widespread and more insisted upon.

Dentistry can much more easily be carried down to the level of a trade than either medicine or law. It is too apparent that a large section of the community is willing to have their dental work done in places where ten, twenty, or possibly forty men are working on salaries under the supervision of a superintendent, or a proprietor, in a big quack office. I say it is too apparent, that large numbers of the community are willing to have their work done in that way, but I do not desire to overestimate it. I do not wish to be understood for a moment as believing that the dental profession will ever degenerate into nothing more than a trade, because I do not. However, I believe there are dangers along those lines which most of us do not fully comprehend, and all of the influence and pressure that can be brought to bear upon the colleges by legislation and by the enforcement of laws by the State Boards, and all possible support and encouragement by the societies and the profession generally, need to be used to the utmost to prevent such tendencies.

Dr. Barrett (closing the discussion): Mr. President--I had hoped that we might hear more from the other side this evening. I have presented this subject as it appears to me, and in a conscientious manner, but necessarily I cannot but be biased more or less by the teachings and the affiliations of my life. I was glad to hear Dr. Reid speak as he did. I have known him for many years, and I have never hesitated to tell him what I conceive to be the truth, or to listen to the truth from him. Plain words are best, and the man who minces matters is the one who does not really make himself effective. It is well for us to speak frankly but fraternally regarding these matters. I told Dr. Reid this afternoon what I believe is absolutely the truth, that, like nearly all members of dental examining boards, he is unfit to examine a student *in the curriculum of the dental college of today*. That is what I said. But I know few men who are more competent to examine practitioners in *practical* work than Dr. Reid. This is what examining boards do not do. They do not examine students in branches in which they are absolutely acknowledged experts, and they do set themselves up as authorities on subjects of which they know comparatively little. They cannot keep themselves *au fait* in the progress of education. That is absolutely impossible for any man who is not himself a teacher. Take the minutiae of the teaching of bacteriology, for instance, a subject that has been introduced in our curriculum within a very recent period. Very few members of dental boards have taken practical courses in this branch sufficient to enable them to examine students in the technique of making cultivations and of studying the different bacteria. That is substantially what I said to Dr. Reid. Is not that true, Doctor?

Dr. Reid: Yes.

Dr. Barrett: In that comprehension of the subject matter he did not take exception to my statement when I made it; and I do not believe he will now. But when it comes to the question of practical work, it is another thing. Dental examining boards do not examine students in branches in which they are the highest authority possible, but they do examine them in things concerning which they know very little, and that is didactic teaching.

The point which I most earnestly wish to emphasize is that there should be some accountability and responsibility on the part of men who stand up to represent anything whatever. It is unsafe to trust any body of men with irresponsible power. Not that they are necessarily unjust or iniquitous, but because it is impossible for most men to view all sides alike. One aspect is certain to present itself most prominently and to receive undue attention.

As in our body politic, there are three divisions in dentistry, the legislative, the executive, and the educational. In the National body it is the legislative, the executive and the judicial, but we have the educational in the place of the latter. The legislative body is the whole of the profession at large, as represented in the societies, for we can have no other representation. We cannot get any expression outside of the societies as a whole; hence to those representative bodies, when properly organized, legislation must exclusively be confined. The colleges have no right to legislate for the profession, any more than they have to formulate enactments on religious subjects. Dental boards have no more authority to legislate for the profession than have the dental colleges. The colleges have no jurisdiction either over the boards or the profession, but they have quite as much authority as have the examining boards and they have been in existence much longer. I think there are college men who entertain the idea that they have a God-given right to do about anything that their aggressive disposition prompts them to do; and I am inclined to think that there may be members of dental examining boards who have a little of the same kind of disposition and feeling. I would have three co-ordinate bodies, neither one of which should be dominant, but all of which should co-operate one with the other for the accomplishment of the highest and the best good. Every one of them should be responsible to somebody, and the dental schools and examining boards, to whom are given such extraordinary privileges, should be held to accountability for their every act. To some superior body should be given authority, not only to legislate, but to punish if any exceed their proper bounds and limits. What shall that power be? It cannot by any possibility be the dental societies, for they are wholly voluntary bodies, and have no really legal existence. The colleges cannot be supreme, for their duties are strictly educational. It cannot be vested in the dental boards, for that is absurd upon its face. To what power can be safely entrusted the welfare of all parties? It must be the law. It is only the courts that have power to enforce their edicts and to prescribe and exact penalties. But what is the character of the laws now in existence? Each State believes that it has the best, and in each there is something of good. But in all there is a great deal of evil. As a whole, our legislation, because each of our nearly fifty States is supreme and irresponsible in this matter which concerns our most vital interests, and as a system it is utterly without system; it is a medley, a farrago of contradictions.

It is from this unfortunate source that our chiefest evils flow. That State is arrayed against State, board against board, and in antagonism too often with sister boards, schools, societies and profession, we owe to our diverse and conflicting laws. In an honest endeavor to bring order out of our chaos conscientious men have secured additional legislation, conferring upon them an authority dangerous to every interest, and they have arrogated to themselves a supremacy justified neither by right nor by expediency. They have made confusion worse confounded and added to our puzzling problem its most dangerous factor. This subject is not a new one to me. It has not been sprung upon me suddenly. I have thought over it long and deeply, and I have prayerfully striven to be guided and swayed by something aside from passion or mere sentiment. I am getting along far enough in life so that I can exercise a judgment that has been matured by a good many years of observation and of some knowledge, and much study and reflection. I have come to the conclusion that the trouble is in our legislation. Is it any wonder that we should have strange things and strange laws when the whole work is experimental from the beginning? We have had no path marked out for us. We have been feeling our way in the dark; we have actually shut out the light from ourselves, and have swung into the darkness because we could not recognize the light. Too often I fear some of us, impelled by our prejudices, present our backs to the only source of illumination and, gazing down into the depths of our own black shadows, have sworn that all was dark. We are the pioneers in America. The foreign countries had nothing to offer us. As in darkness and in doubt we have marked out our course, what wonder that we have made such great mistakes? Is it not possible for us to begin, even now, at this late day, to retrace our steps, to take a new start and, so far as we can, observing certain principles upon which legislation should be based, do the work over again?

In reference to the remarks of Dr. Noyes, concerning higher preliminary education, let me ask him if he has read the history of the National Association of Faculties for the past three or four years? Has he noted the progress made? The colleges have advanced quite as fast as public sentiment has been aroused to sustain them. It would not do for a few of the better of them to break away from the rest, for that implies a disruption of our profession. Unfortunately there are teachers and faculties who are not always perhaps swayed by the most disinterested considerations, and, which is more unfortunate, sometimes these are the only schools from whom this ought least to be expected. Human nature is weak and college professors are subject to it like other men. But the great battle for progress has been fought and decisively won. It is now only a question of speed; there is no school that does not recognize the absolute necessity for higher literary attainments. But some of us would go farther than others. Some are radical and some conservative. Between these two extremes will be found the right course and that path we are certain to tread. Dr. Noyes said that the majority of schools represented are those that are not of the highest character, and that they have fought against preliminary requirements. We knew this long before he guessed it; years before he dreamed of it. The representatives of certain schools are not necessarily vicious because they view things in a different light from that in which we see it. We are all gradually getting wiser. We are getting nearer each other. Last year, when certain advanced legislation was brought up and urged, some teachers fought it as urgently and as persistently as they dared to do until a test vote showed that the movement would be carried, and then they nobly and fraternally turned in and made it practically unanimous. When on the final passage he voted for it, I said to the leader of the opposition, "Doctor, I thought you were opposed to this legislation," and he replied, "I am not such a fool as to have my vote published to the world as against this matter. I am doubtful about the propriety of this advancement at the present time, but it was certain to be carried and I will do what I can to help in making it practicable." We are educating public sentiment in connection with the colleges. In the past, some may have done bad work; but upon the whole they average fairly well, and I tell you there are many members in the Association of Colleges who are working for the best and highest interests of the profession, regardless of their own personal good—men who are actuated by the highest motives and deepest love for their profession, and by a sentiment that is not swayed by any personal consideration whatsoever. Those men have an influence in that Association and the profession and they are doing great good. Sometimes they are criticized severely, and perhaps they ought to be. But do not prematurely shoot at the fiddler; he may be doing the best he knows how, and we are getting along on the whole very well and are making steady advancement. When colleges take a step backward, throw a club at them, but if the members of the profession will exercise a discriminating knowledge and will condemn things that are evil, and, at the same time, give credit to the things that are good, they will assist in this work much more than by the indiscriminate abuse that is but the unmistakable evidence of a narrow and a bigoted and prejudiced mind.

There have been in the past, and there are even now, men who feel it to be their mission to condemn everything American, everything professional, everything educational, everything in connection with the profession to which they pretend to devote themselves. They are the men who have slandered dentistry, who have reviled the colleges and their professional brethren, and they have published their tirades broadcast. They never publish anything else. They are unpatriotic, unprofessional Americans, even though they may be thought to stand high in the profession. They have charged things that are absolutely false, and have either maliciously or recklessly scattered them broadcast in dental journals. They have blackened our professional character until legislation has been taken abroad directly against Americans in professional affairs. What are we going to do about it? Shall we continue to malign and to wage vindictive war upon each other? No. Let us each one take hold and do what we can towards creating a proper educational sentiment, and I tell you we will see our profession increase in respectability faster than it has in the past, and the world will never witness such an immense spread in influence, in education, in status, in standing. No solidarity was ever built up and planted on so high an eminence as dentistry has been within so short a time. It has been accomplished by working together; by helping each other; by each holding out his torch to add to the general illumination. Within a few years we have witnessed the distressing spectacle of professional men attempting to build themselves and their faction up by tearing down that erected by their brother; of blind and injudicious and selfish men trying to climb to higher positions by trampling under foot the achievements and reputations of other laborers in the same field; of men elevating themselves through planting their dirty feet upon the shoulders sometimes of better men. I adjure each and every one of you to frown down any such unworthy actions. Let it be manifest that we will not sustain such conduct on the part of any man, be he high or low, teacher, examiner or practitioner.

It is idle to attempt to throw the responsibility for our possible misfortunes upon others. If we are losing our professional grip and our practice, let it not be charged to any one whatever except ourselves. If we do not keep up with professional advancement, we must expect to be left by the wayside. It is cowardly to attempt to secure a monopoly by debarring others entrance into the field we are occupying. We have no patent on practice. If our boundaries are too narrow let us push them back. If our practice is too restricted, let us expand it. That is precisely what the schools are helping us to do. Everything added to the curriculum will enlarge the practice of those who are to come after us. Every branch of instruction introduced into college teaching adds to our emoluments by broadening the scope and extent of our practice. We have arrived at our present great stature by helping each other. God forbid that all the accomplishments of the past shall be made nugatory by fraternal bickerings, or that dentistry, which has accomplished and which promises so much, shall be by selfish or ill-advised and ambitious men, torn into contending fragments of that which should form one harmonious whole.

THE ODONTOGRAPHIC SOCIETY.

Regular meeting October 15, 1900, the President, T. L. Gilmer, in the chair.

Dr. C. T. Gramm contributed a paper entitled "The Mouth as an Index to General Pathologic Conditions."

DISCUSSION.

Dr. Geo. B. Perry: Being called upon to open this discussion, is a most profound surprise to me and a compliment, but quite too sudden. As Dr. Gramm passed the chair in which I was sitting he asked me to open on his paper. I replied I had not seen it and did not wish to do so. He read the paper and I was then called upon by the chair. Were I to follow in the discussion rather than lead it, my position before you would be changed. One gathers ideas for expression in listening to others and has an opportunity to arrange thoughts that are more acceptable to his auditors than those hurriedly framed, as under the present circumstances. Had I been permitted to look the subject matter over I would endeavor to express myself upon the different headings classed under the title of "The Mouth as an Index to General Pathologic Conditions" in an intelligent manner, and accept the invitation to open the discussion; but under the present conditions it would be unfair to the essayist and to myself to attempt an analysis of them, and therefore I will simply make a few general remarks and give the time to those who, through study along these lines are more conversant with them. The importance of the paper will appeal to all present. The necessity of correctly diagnosing the different pathologic conditions of the mouth carefully and thoroughly and treating them according to your best intelligence needs no comment from me. I am much interested in the different diseases presented, and particularly that of degeneracy in its various forms, as we find it shown to us. We have in the profession of Chicago men who have devoted considerable time to this subject and who have given us illustrated lectures for our advancement. I refer to Dr. Talbot and others. It is not infrequently the case that we find in our practice a patient with a pathologic condition that is difficult of diagnosis and after noting the different points with care, it becomes necessary to discharge the patient and confer with some one of wider experience as to the best method of procedure.

His reference to the periosteum causes me to feel that I am likely to have an irritation of that membrane in trying to digest the ideas suggested in the scope of his essay.

Dr. Geo. W. Cook: I don't know that I can say anything that will be of especial interest on the paper. It treats so generally of the subject that it would take about three weeks to discuss all the points brought up. The different diseases, so-called general pathological diseases, are to my mind local diseases brought about by certain general derangements of the system. Many of the diseases spoken of by the essayist as being an index to the general constitution. Of course, they are to a large extent, perhaps, but however, they are local after all. As regards dental caries; there is no question but that it is a local disease. There are certain constitutional conditions that may exist that favor it, however. When we consider the changes that take place in the saliva, making it a better culture medium for the generation of micro-organisms, then we can speak of it only as a local condition after all. There is a great influence which influences this degeneracy, in my mind, and it is nothing more or less than the conditions under which we live, favoring certain toxic cells to be continued in the system to the extent that the so-called degenerate forms of tissue are due to intoxication, not auto-intoxication. The work that has recently been done by a number of men in regard to the infection of diseases, such diseases as were generally considered auto-intoxicated conditions, bring us to look upon the subject in a different light to what we did even five or six years ago. And those are certain alimentary troubles, constipation and things of that kind, stopping the alimentary tract, and the ingress into the circulation of certain micro-organisms that are constantly in the intestinal tract, such as the coli bacilli; and Adami and a number of other men have come to the conclusion that anemia and many of these diseases that we have known practically nothing about their etiology are due to nothing more or less than a form of infection due to a micro-organism which might be non-pathogenic ordinarily, and its action is only due to its generating or acting upon the cells in the blood in such a way as to allow perhaps more and more growth to take place, more and more to circulate in the blood, thus changing the equilibrium of the metabolism of the body in such a way as to bring about a local action such as certain conditions that we find—dental caries, pyorrhea and such other local lesions in the mouth. As I say, the subject is a large one and I haven't any practical right to discuss the paper because I have very little to add. The essayist has laid out, as I say, an immense plot of ground to be plowed up and assimilated, and it would take about three weeks to do it, and perhaps you didn't all come prepared to stay that long and others may want to talk upon the subject. As for auto-intoxication as the study of biological chemistry and cell physiology has advanced, we have to look upon this as not a true and scientific term. Vaughan in 1896 called attention to certain cell products as being poisons; he did not discuss the condition as auto-intoxication, but as auto-genous conditions, due to action of such cell products as xanthin uric acid and hypoxanthin, etc. Now, going back to the work of Adami we are forced to say that all these conditions that have been called auto-intoxication are infection through the walls of the intestine. In this way it is possible to understand why certain diseases show a local manfestation, and as the saliva would be changed micro-organism would naturally be changed also, and in that way bring about a local infection.

Dr. W. H. G. Logan: It appealed to me in listening to the paper that the two points brought out amounted to this: He claims that in certain diseases we always find lines about the gums, and again, we find the same lines without said conditions in the system. They are simply there as a matter of fact and are not worthy of further consideration.

He stated that the diseases of caries and of pyorrhea alveolaris, as I understand it, that those two conditions were systemic conditions. It has never seemed to me that caries was a systemic disease, and I do not feel that it is now. But believe it is carried on without systemic disturbances at all, only as an after result, not as a primary cause. And in pyorrhea there may be at various times a disturbance of the system that results in the loosening of the gums and suppurative conditions. In some diseases where certain drugs are used to excess, then will you find disturbances in all the tissues, and especially pronounced here and there, resulting in suppurative conditions about the necks of the teeth; may be pyorrhea, may be poisonous results from the drug, probably the latter and not true pyorrhea. But what true pyorrhea is, of course, is yet a question.

I would only differ with the essayist in his statement that caries of teeth is a systemic disease. How can one entertain that thought, when it has been proven that caries can be produced in the teeth without any systemic communication? I thank you.

Dr. D. M. Cattell: As one or two have remarked that they thought caries was not the result of any systemic trouble, I shall have to raise my voice for the other side. I have been for years of this conclusion. And since the fact was recognized that we have immunity from caries and we have times when caries is rampant, it seems to me that a systemic condition must be back of that; it cannot be inherent in the teeth themselves. The constituency of the saliva changes, the juices of the body generally change. What is it then that produces immunity from caries if it be not a change in the condition of the surroundings, or the juices of the body, or those juices coming into the mouth? We know very well that there are certain conditions of the system generally which change the constituents of the saliva. A patient takes the chair, we begin working, the saliva appears to us normal; i. e., it is fairly thin; we notice nothing peculiar about it. In time the saliva becomes very ropy; a finger touching the mucous membrane somewhere and drawn away, the saliva will draw out like a wire. Again, we have individuals who, after being worked on awhile, become nervous, they become abnormal in some way and the saliva has a decided odor to it; if the odor was from the stomach or some condition of the stomach we would notice it at first, but it is not noticed then, it is only after awhile and they become more nervous; the saliva itself is changed as it pours into the mouth. In the state of excitement the saliva or the general juices of the body will change. We know very well how the urine will change with a little disturbance of the system. At one micturition it may be clear, at another it may be very marked in its color; some change of the general condition of the body has taken place through the influence of medicine or of some food that we have eaten or through some excitement in some way. We know very well that fright will change the constituents of many of the juices of the body, and especially fear of being hurt. A nursing mother takes the chair, and many operations that we perform will so influence general conditions, especially the secretions of the mammary glands, that the child nursing soon afterward will have the colic on account of the changed condition of the mother's milk. So that the juices of the body have very much to do with certain local disturbances, or certain local expressions, and I cannot conceive but that caries is a local expression of the condition of the juices.

We may not be able to recognize what the general condition of the system is, because we have patients in the prime of life, robust, hearty, healthy apparently, so far as we are able to judge, and yet, their teeth are melting away on account of the peculiar condition of their surroundings. The juices of the body decompose readily and micro-organisms proliferate profusely and the damage is done. Other patients may come to us who seem tottering on the verge of the grave; they have been ill for years; have not been supposed healthy by physicians or friends, and yet, their teeth are all but perfect. There is something here we do not understand, so that until much more scientific work is done and until more positive proof is given that it is not the general system that produces the changes in the constituents of the saliva, will I be ready to accept the fact that caries is simply a local condition and that the general system has nothing to do with it.

Dr. Geo. W. Cook: For fear that I was misunderstood or didn't understand myself, I meant to say that caries was solely a local condition, and was constitutional only so far as the influence of the saliva influenced the growth and development of micro-organisms and the substances which they produce to cause dental caries. It is a well demonstrated fact that if you change the calcium or magnesium in a solution you change the growth and development of certain micro-organisms; you change a pathogenic to a non-pathogenic organism; you change an acid producing organism to one that will not produce acid. Therefore, I think that the saliva has something to do with the growth of micro-organisms, with their development, as to what effect they have on tissue with which they are in contact. There is no question about that, because if you change the ionic equilibrium of the saliva you certainly change the pathological condition of micro-organisms, or vice versa. As to the expression of this into the saliva, it is only the manufacture of a culture medium suitable, and what that change is we don't just know about, as Dr. Cattell says. But still, the local condition of caries as it appears is a local condition. It is only the development of certain substances for the micro-organisms to grow on and produce the necessary substances that bring about dental caries. If we make artificial sea water and put the sea urchin egg in it it will develop only to a certain point and then cease. And if such changes take place in the saliva you bring about a condition by which acid-producing organisms cannot produce their acid, they cannot develop the substance necessary to cause disintegration of the enamel. And many of these things are brought about, as I hinted at a moment ago, through infection from the intestinal tract. Auto-intoxication is a misnomer. Vaughan a few years ago tried to explain something about auto-intoxication; called those diseases that are usually spoken of as auto-intoxication, which is disintegration of the cell nucleus in the tissue, liberating adnenin, xanthin and uric acid and all that, poisonous these conditions he called autogenous disease substances, that are found both in the vegetable and animal tissue in the process of their metabolism, and when he got through and there was a doubt as to whether there was even in any place for the last named diseases or not. But later investigation has proven that most all of these are brought about by some disturbance in the metabolism of the system which has been produced by the action of micro-organisms in the intestinal tract, and that gives us an opportunity for local infection of certain diseases of the mouth, and certain other diseases, both in the skin and in other organs of the body.

I don't know whether I have explained myself or not.

Dr. J. E. Hinkins: Last year and for several years past I have been more or less interested in chemistry of the mouth. I have made a number of analyses of the saliva of patients as they came to my office, taking 5 cc. of saliva before operating, and 5 cc. after completing an operation. I have never been able to obtain the same analysis from any one patient, and I think about eight or ten different analyses of one patient is all I have made. I found that in some patients the saliva will flow more freely than in others, and the greater amount of saliva the greater amount of acid. I used 1-10 normal sodium hydrate and phenol-phthalein as the indicator. You take a patient before operating and you would find probably one to three degrees acid, and after you had prepared the cavity and inserted the filling, from one hour to one and a half, it would sometimes run up to as much as ten degrees. I think altogether I have made about forty different analyses, but I was never able to find any two the same.

Dr. C. T. Gramm (closing the discussion): I have little to add to that which I have written. I think there should be no question as to the fitness of the specific term "auto-intoxication" in differentiation from the intoxication due to infection from outward sources —that infection which I wrote of as being derived from air, food, water, and, I may add, from contact with contagion. Let us consider coryza as an example. Coryza is due purely to an infection. The equipoise of nerve force which probably had been disturbed before this new infection took place, is still farther broken down to the extent of temporarily altering the entire metabolism of the system. Elimination of the toxic products of the excretory organs is retarded and auto-intoxication is established. I respectfully refer my critics to Bouchard's work on this subject.

I am glad that so able a man as Dr. Cattell upholds my statement that persistent caries is a result of a systemic lesion, at least having the first impetus derived from that source. I wish to emphasize that in my paper I dealt with persistent caries—for instance, caries in neurotic children, or that type concomitant with pregnancy, when within a few weeks a set of teeth which has been the pride of the individual and in which you have felt satisfaction, has gone to pieces. In such instances the fault lies in the established physiological irritation of pregnancy and an altered metabolism. I think there is hardly a child born that the mother's teeth do not suffer more or less in consequence. It cannot be maintained that caries of the teeth during pregnancy is a purely local condition.

It is true that the field I touched upon tonight is a vast one. The very fact that a field so vast, that even its bounds are hardly understood, lies before the dental profession is precisely my reason for bringing the matter to your attention.

NEW APPLIANCES.

Dr. C. T. Gramm: I would like to present a new appliance. It is a very simple thing and it was suggested in an antrum case. The patient had had an abscessed tooth. The abscess had voided into the antrum and from this had infiltrated the palate bone of the superior maxillary. It voided through several openings; one of them was particularly large, and when I first saw the case this opening had been enlarged by a physician and a cavity which seemed not to have been understood as being the antrum of Highmore had been packed every day with a wick-like material, probably saturated with some antiseptic. The packing in the antrum of Highmore did not answer the purpose, apparently, for each time it was removed it was covered with pus. The patient came into my care just one week before she wished to go on a journey which was to occupy about four weeks, and there arose the question of self-treatment during that time. Mild antiseptic washes were recommended and I wish to mention that a solution of protargol was the one used with greatest benefit. It occurred to me that nothing would answer for the purpose of drainage and at the same time for stoppage of that opening in the roof of the mouth better than an ordinary small glass collar button, I found one of the right size that would pass into the opening, be caught at its head by the connective tissue about the opening, and inserted it. It was easy to insert and remove it and it kept drainage well established. Upon the patient's return the edges of the connective tissue about the opening were scarified and drawn together by means of a silver-wire suture. The success of the button was gratifying. It raised the point in my mind whether, after all, the operation for antrum troubles would not be more beneficial to both patient and operator if the opening were made through the roof of the mouth into the antrum of Highmore. I believe that it would be for several reasons. First, because the wall of bone which is penetrated is heavy, is more vascular, is more likely to heal thoroughly. Second, because the integument of the cheek would not interfere in the operation the degree that it often does when the opening is made buccally. While this is not the time to discuss operations in antrum diseases, I do take this opportunity to introduce the button as a new appliance.

"INCIDENTS OF OFFICE PRACTICE."

Dr. D. M. Cattell: A young man came in the clinic, bringing with him a skiagraph of the anterior half of his head in profile, showing the upper and lower jaws extending so far forward that the bony expression was like that of an ourang-outang or chimpanzee. He said a surgeon in a neighboring city had treated the case. The surgeon first extracted the second bicuspids above, then he dissected the portions of the process occupying the space of the bicuspids; then sawing through the process above the apices of the anterior roots, injuring the mucous membrane as little as possible, cutting from one bicuspid space on one side to the opposite space, i. e., the process was loosened from the superior maxilla a short way above the apices of the roots, and then the whole loosened portion was moved backward the space of the extracted bicuspids toward the posterior mouth, and that reduced the setting forward of the upper process considerably. The young man also brought plaster casts from impressions taken before the operation, which also showed marked protrusion. Then the lower jaw was operated upon similarly, the anterior teeth forward of the second bicuspid, the first bicuspid and a portion of the process was removed, and then sawing through just below the apices of the anterior teeth, the body of the process was pushed backward. They were held in position by ligating the teeth with wires, no other appliance being used. The upper portion, when we saw the case the other day, had knitted nicely and was fairly firm in its position. That had been operated upon about two months ago. The lower one had been operated upon about three weeks ago, and knitting of the bony tissue had commenced and was doing fairly well. The mucous membrane had healed, and the patient said that in both instances healing had taken place by first intention. There had not, so far as he knew, been a drop of pus resulting. Just how true that was probably he did not know; of course, I do not. Evidently, however, healing had taken place nicely. The young man was in fair health, not robust. The expression has been very much reduced, so that the line of contour of the face is fairly good. He came in because he thought the lower portion was moving forward a little, and the occlusion of the lower teeth with the lingual surfaces of the anterior upper teeth was becoming a little too close. It was one of the greatest cases of regulating an irregularity of the face that I ever happened to see. The operation was performed by a surgeon, not an oral specialist.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.
PUBLISHED MONTHLY.
EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE NATIONAL DENTAL ASSOCIATION.

This meeting will be held in Milwaukee the first Tuesday of August next. Several of the officers of societies are sending out requests for papers, and it seems likely that a generous response will be made so that a good program may be presented. We expect a large attendance, especially from the west and middle west, and if the meeting place is well selected and well ventilated and roomy, we ought to hold a good meeting.

LESIONS OF THE MUCOUS MEMBRANE.

We are likely to forget the value of some drugs—long in use—for the treatment of lesions of the mucous membrane in the mad rush for the newer drugs. Many times an habitual smoker will present lesions of the tongue and cheeks which will respond to the treatment very simply by directing the use of two five grain tablets of chlorate of potash to be dissolved slowly, daily, for a week. This is also good treatment for abrasions of the mucous membrane and is always good for syphilitic sore mouth. I have found it useful after some extensive lacerations of the gums in the treatment of pyorrhea alveolaris. In all cases of thickened gums, easily bleeding, dry them and paint them with compound tincture of iodine every other day for a week or two. Have the patient use a spray two or three times daily of the following:

℞.	Hydronapthal	gr. xx.
	Eucalyptol	Min. v.
	Oil of Cloves	Min. iij.
	Alcohol	℥ ss.
	Glycerine	ʒ ij.
	Distilled water	℥ iv.

M. S.—Use it full strength as a spray for the mouth and throat.

It is a good plan to have a patient carefully rinse the mouth with a weak soda solution before using the above. If the membrane is red or slightly inflamed use a dilute solution of acetic acid 1 to 300 (common vinegar diluted will do). In all cases of excoriation around the inner surface of the angles of the lips I use pyokptanin, yellow. Plaster it over the rough and denuded surface and leave it for two or three minutes. In simple gingivitis nothing is better than painting the whole gums with a saturated solution of potassium iodide (it does not matter if the patient swallows a little of it). Do this daily for four or five days. Then give soziodol internally, gr. iij. three times daily after meals. For a tongue that looks badly have it scrubbed with diluted lemon juice and then use lime water or milk of magnesia or fill the mouth with powdered carbonate of magnesia. Inquire if the bowels are open—if not open them with any approved aperient or cathartic. Diluted ferripyrine will stop bleeding gums. The tincture of matico will do this also.

LOCAL ANESTHETICS.

In spite of the fact that cocaine and eucain and various other local anesthetics have been in use for a considerable period, the cry of the dentist who has much extracting of teeth to do is for a good safe compound to deaden pain in removing teeth. For our part we do not see any good reason for not using nitrous oxide for this purpose as being much safer and more reliable altogether than the hypodermic use of any drug that will pollute the blood stream. Many times we have received letters from dentists saying that they had sore mouths from the use of medicines injected into the tissues even when the instruments were, apparently, perfectly clean and sterile. The time required for the use of nitrous oxide cannot, ordinarily, be more than that used for the injection of remedies, and we think it a much cleaner operation and altogether safer for the non-medical dentist. Why not try this, based upon so many hundreds of thousands of successes as compared with the numerous failures reported from the hypodermatic methods.

REVIEWS AND ABSTRACTS.

THE AMERICAN TEXT BOOK OF OPERATIVE DENTISTRY. In contributions by eminent American authorities. Edited by EDWARD C. KIRK, D. D. S., Professor of Clinical Dentistry, University of Pennsylvania, Department of Dentistry. New (2d) edition. In one very handsome octavo volume of 857 pages, with 897 engravings. Cloth, $6.00 net; leather, $7.00 net. Just ready. Lea Brothers & Co., Publishers, Philadelphia and New York.

An extended notice will be given next month of this new volume.

BOOKS RECEIVED.

DENTAL ANATOMY. Note Book by Douglas Gabell, M. R. C. S., L. R. C. P., L. D. S., Assistant Surgeon at the Dental Hospital of London, and Curator of the School Museum. London: Claudius Ash & Sons, limited, 5, 6, 7, 8 and 9 Broad Street, Golden Square, W. 1900.

Bound in cloth, containing thirty-one pages. Price, three shillings.

PRACTICAL NOTES.

ATTACHMENT FOR INLAY AND BRIDGE-WORK.*

By J. P. CARMICHAEL, D. D. S., MILWAUKEE, WIS.

I wish to draw your attention to a plan of attachment for bridge-work and also a firm and reliable support for inlays, the building up of broken teeth and the opening of the bite in cases of badly worn or broken teeth.

The system of work that I shall endeavor to explain to you is not only artistic, but is unequalled in its scope and almost unlimited in its application to any tooth in the mouth. Its permanency and durability has now stood the test of ten years.

Some of you will perhaps remember a case I presented in a clinic before this society some six years ago. That work, as shown, was left uncemented, so that it could be removed and examined by the members of the society present. It was afterwards cemented in place, and I was pleased to receive a communication from the patient, a young physician, vouching for the service it has rendered. Perhaps there are few cases that would receive harder use and where there are shorter teeth to fasten to.

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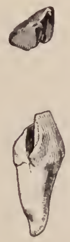
*Read before the Northern Illinois Dental Society.

Undoubtedly to your mind comes the question, is this work going to last? That was the first query to my own mind, therefore the reason for my tardiness in bringing the results to your notice. It has proved far beyond my most sanguine expectations, and has led me to the inquiry, why does it hold so well? Several reasons present themselves. One quality is paramount, and that is rigidness, or making these fasteners of sufficient strength to bear the burden for which it was intended, without any spring. The failure of bands and other fastenings for bridge-work is due, in a large degree, to the spring in the metal, when force is applied. Where there is the slightest flexibility the cement loosens up, disintegrates and is washed out by the fluids of the mouth. In a short time we find the attachments loosening, to say nothing of cutting between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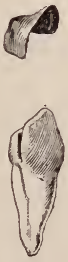
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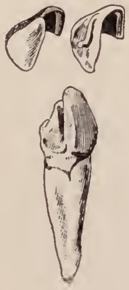
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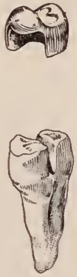
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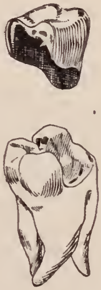

No. 5.

No. 1. Represents the contour inlay filling of proximal surface of central incisor.

No. 2. Showing bridge attachment for a cuspid tooth.

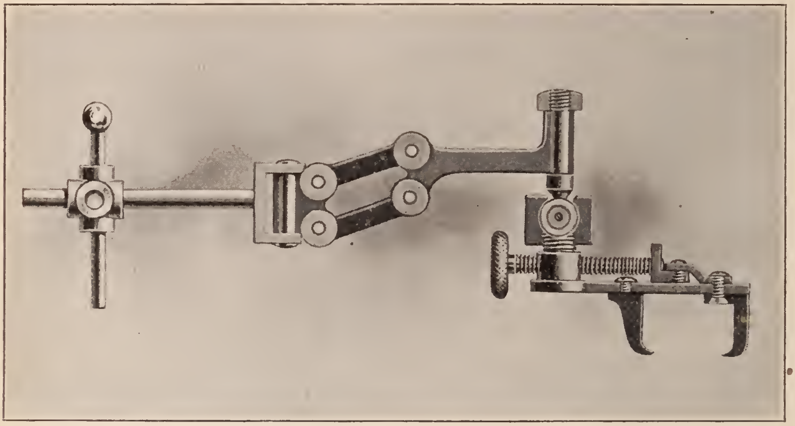
No. 3. Illustrates Porcelain inlay, showing the attachment prepared with staple of platinum to secure porcelain, also complete ready to be cemented into place.

No. 4. Illustrates the building of cusps of badly worn teeth or opening the bite.

No. 5. Represents the building up and restoring of a badly decayed and broken molar.

the teeth, filling the spaces with a band, crowding the gum from its normal position, producing diseases or disturbance upon or about a tooth that has a double duty to perform.

If you set out to loosen the attachment of a bridge the first thing you attempt to do would be to spring the metal of which it is made, and you would soon succeed in loosening it to that degree that it can be easily removed. Therefore I claim for this attachment *rigidness of structure,* and made to slide perfectly to place upon the tooth, to have *no* spring, and to carry the support of the bridge without yielding to the strain in any degree. The close application of the metal to the tooth admits of such a small quantity of cement that it forms an almost inseparable union.



Measuring Device.

The next question that arises, can the edges of this fastener be made tight enough to prevent the washing out of the cement beneath its edges?

Did it ever occur to you, that in fitting a crown or a band, that you have an edge to be fitted to the tooth, oftentimes over a bulge and frequently under the loose margin of the gum, where you cannot see how closely it is adapted, and the cement that you are placing so much reliance upon coming in contact with the secretions before it has hardened? while with this attachment the pattern form is of pure gold or platinum, and when burnished to the tooth is so closely adapted that the edges are so tight the cement is not visible.

All this is accomplished *without cutting spaces* between the teeth or in anywise infringing upon the natural condition or defacing of the tooth to which it is applied.

The first and most important step is the preparation of the tooth, and this depends, of course, in a degree, upon the character of the case in hand. When we set out to construct a bridge there is one *all important* factor that is usually overlooked, and that is the relative positions of the teeth or roots to which the attachments are to be made, and the *most* of us find our bridge, when completed, so far from going to place in the mouth that we begin to distrust our impression, or else we think the bridge must have warped in soldering, but we struggle with it, and after a good deal of springing of the bridge, wrenching of the teeth and cutting away portions, we succeed in getting it to place. What is the natural result of all this upon the bridge? The porcelain facings are fractured and in a short time drop off. We depend too much upon the cement to fill in the space made by the operation, thus greatly lessening the strength and durability of the work.

I have here a little device, the purpose of which is to give you the parallel lines or portions of the tooth structure necessary to be dressed away, the direction of the post in the root and the line of the grooves to be cut in the tooth to receive the fastener. This instrument, though somewhat crude and differing materially from what I hope to produce in the near future, is of great benefit and the saving of a great deal of guesswork. I do not know of anything as yet having been devised for the purpose, and I hope some of you ingenious ones will work out the problem.

After having determined upon the direction of my grooves and the portion of the tooth necessary to be cut away, to allow for the free and easy adjustment of the bridge when completed, we then proceed with the preparation of the tooth for my fastener. This is most conveniently done with the carborundum disk to flatten the sides of the tooth, extending to about its center line, and without cutting a space entirely through or between the teeth, thus allowing sufficient space to receive the thickness of gold necessary for the fastener when completed. I then cut my grooves, using disk or enamel burs, take an impression of the tooth and make a little die, as you see here. On this die I burnish a thin pattern form of pure gold, which is annealed and refitted upon the natural tooth. This pattern form, when burnished to place upon the tooth, usually fits so close that it is difficult to remove the same without bending. I, therefore, fit a wire staple, made of clasp-metal, into the grooves and upon the pattern form, which aids materially in removing the form and retaining its shape during the process of adding the necessary metal used in stiffening. This process of stiffening is of the utmost importance and should be carried out cautiously, unless you would be disappointed in results, for upon this depends strength and durability so important to success of the work.

For inlay work and in opening the bite in cases of badly worn teeth this fastener can be applied with most satisfactory results, the attachment serving as a support for the inlay as well as a secure fastening to the tooth.

MEMORANDA.

Chloretone is a hypnotic, and local anesthetic.

Have you used suprarenal extract on the mucous membrane to bleach it?

Mercurol and nargol are two germicides gotten out by Parke, Davis & Co., of Detroit.

Izal (which is now prepared for medical use) appears to possess valuable properties.

Dr. H. P. Carlton, of San Francisco, spent a few days in Chicago after the close of the session of Dental Pedagogics at Nashville.

A NEW DENTAL JOURNAL,

Published at Brussells, *La Belgique Dentaire*, a monthly journal.

The work of Dr. C. N. Johnson has received most favorable notices in all of our European exchanges so far received since its publication.

Information, a popular journal of hygiene, has been removed to Madison, Wisconsin, and is now published by W. G. Beecroft, D. D. S.

LOCAL ANESTHETICS.

A truthful west side dentist advertises as follows: "Teeth extracted with great pains."

Dr. C. S. Hurlbut, of Springfield, Mass., died January 7 at his home. Dr. Hurlbut was one of the best known dentists in Massachusetts and had held many positions of honor and trust.

M. George Viau, editor of *L'Odontologic*, has been nominated Chevalier of the Legion of Honor in a recent promulgation. M. Viau was treasurer of the Dental Congress, and is a writer of distinction. This is a well-merited honor.

The German government is beginning to get after the holders of bogus diplomas issued by the infamous mills in Chicago, and we are likely to soon see their finish, as Armstrong has been sent to jail for one year, with others soon to follow.

The Pan-American Exposition at Buffalo promises to be a great success, and many exhibits of a dental character will be made. It is a pity that none of the associations are to meet in Buffalo, as it would encourage the profession in that part of the world.

Dental medicine and therapeutics has not become strong enough to entitle it to recognition in the getting up of the 1900 pharmacopea. Dr. Benedict, of Buffalo, offered a resolution that the dental profession should be represented in the reunion, but the motion was lost.

The Otey bill regarding dentists in the army and navy at present writing is up again with a prospect of passing both houses. It is hoped that there will not be such a scramble for the places of examiners as was evident last winter and spring when it seemed likely that the bill would become a law.

Recent experiments by Burgess, detailed in the *Lancet*, show that biniodide of mercury when brought into solution by adding iodide of potassium, is far superior as a disinfectant to bichloride of mercury as it does *not* precipitate albumin. Its germicidal power is vastly superior to corrosive sublimate. Boric acid failed to destroy the *bacillus coli communis.*

NOTICE.

Someone is selling a formula for a local anesthetic to dentists in small towns, and at the same time says that the formula was sold to me. I never bought a formula in my life, and have never recommended a secret formula to anyone. So, when he comes around to see you, kick him out.

A. W. HARLAN.

A 20 per cent solution of formalin painted over the surfaces of sweaty, stinking feet, will, according to Gerdeck, stop the sweating and destroy the odor. This must be done morning, noon and night, and on the following morning a concentrated solution (40 per cent) would stop the odor and restrain the perspiration for three months. This is of special value to soldiers and others who stand or walk much.

NEW YORK ODONTOLOGICAL SOCIETY.

At the annual meeting of the above society, the following officers were elected for the year 1901: President, Dr. W. W. Walker; Vice President, Dr. J. F. P. Hodson, Recording Secretary, Dr. John I. Hart; Treasurer, Dr. F. C. Walker; Curator, Dr. J. Adams Bishop; Editor, Dr. W. J. Turner; Corresponding Secretary, Dr. W. D. Tracey.

As a digester of putrescent pulp the papain mixture—papain 1 part, glycerol 1 part and hydrochloric acid 1 to 300 parts—is unequaled. It can been used to pack into old and large pyorrhea pockets to create a fresh new surface. To digest masses of dead and decomposing mucus in the tonsillar glands—possibly in the antrum (if there is a good outlet). If the pulp is dead in a tooth seal it within for two weeks or longer if necessary. Try it.

OHIO STATE DENTAL SOCIETY.

Following are the officers of the society for 1901: President, H. F. Harvey, Cleveland; First Vice President, Otto Arnold, Columbus; Second Vice President, J. B. Bauman, Columbus; Secretary, S. D. Ruggles, Portsmouth; Treasurer, C. I. Keely, Hamilton. Yours truly,

S. D. RUGGLES,
Secretary.

The following resolution was offered and adopted at a meeting of the Odontological Society of Chicago, held December 18, 1900, and the Secretary was instructed to forward a copy of the same to the Governor-elect, Hon. Richard Yates:

Resolved, It is the sense of the Odontological Society of Chicago, that in view of the efficient services of Dr. J. G. Reid, as Secretary of the State Board of Dental Examiners, we believe it to the best interests of the people of the State that he be continued in office.

A communication has been sent to the editor describing a case of mutilation of the teeth of a young lady by one of the advertising fraternity, where a contract was made to supply two gold bridges and fill the teeth for $25. After collecting the money one bridge was made and inserted in *two* hours and the other teeth cut off, but the bridge was not made, nor the teeth filled. A demand was made for the completion of the work but the operator declined to do it unless he was paid $15 more. What redress has she, asks our correspondent. We say the law, but as the young lady has no money what can she do?

INSTITUTE OF DENTAL PEDAGOGICS.

The eighth annual meeting convened at the Maxwell House, Nashville, Tenn., Thursday, Dec. 27th, 1900. About 75 delegates were in attendance, representing 23 colleges. Most successful meeting yet held. Election of officers resulted as follows: President, Geo. E. Hunt, Indianapolis; Vice-Pres., Hart J. Goslee, Chicago; Secy.-Treas., H. B. Tileston, Louisville; member Ex-Board, three years, W. H. Whitslar, Cleveland. Next place of meeting lies between Ann Arbor, Mich., Buffalo, N. Y., and Pittsburg, Pa., to be decided by Executive Board.

OFFICERS OF THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

At a meeting held December 17th, 1900, the following officers were elected for the ensuing year: President, Dr. L. S. Tenney; First Vice-President, Dr. W. T. Reeves; Secretary, Dr. Frank H. Zinn, re-elected; Treasurer, Dr. George N. West. Dr. F. E. Roach was elected a member of the Board of Directors. The Board of Censors is as follows: Dr. Crosby Davis, Dr. Winthrop Girling, and Dr. Fred B. Noyes. A resolution was offered and adopted, recommending to the Governor-elect, Hon. Richard Yates, that Dr. J. G. Reid be continued as Secretary of the State Board of Dental Examiners.

INDIANA DENTAL JOURNAL.

The editor, Dr. Geo. Edwin Hunt, has sent out a notice that publication is suspended. *The Indiana Dental Journal* is no more. We were pleased with the *Journal*, and the editor had the right ethical idea about things. He did not go around trying to eat in the potato patches of others without leave. On several occasions we had the opportunity to test his genuineness, and always found him on the right side. He was an enemy to shams of all kinds, and was not afraid to say so—always in a gentlemanly manner. We regret his retirement from the arena, because he was so genuine and just and honest and capable. Here's our hand, and the pages of this journal are open to you for the dissemination of basal truths when you cannot hold onto them longer and they must see the light of day.

NEW YORK ODONTOLOGICAL SOCIETY.

The thirty-third anniversary of the above society will take place at the Academy of Medicine, Tuesday, January 15, 1901, at two and eight P. M.

At the afternoon session, beginning at two o'clock, Dr. Joseph Head, of Philadelphia, will give a clinic, showing recent advances in the methods of inserting porcelain inlays.

Other clinics of interest will also be given, after which short descriptions of clinics will be given by the clinicians.

In the evening at eight o'clock, Dr. Truman W. Brophy, of Chicago, will read a paper, subject, "The Surgical Treatment of Cleft Palate," illustrated by the use of the stereopticon.

W. D. TRACY,
Corresponding Secretary,
46 West 37th St., New York.

CONSULTATIONS.

A dental friend had occasion recently to examine a case where a perforation of the floor of a pulp chamber had been made by some inexperienced operator and at the first visit he could not determine the amount of the damage so he stuffed the tooth and had a second visit. The patient was referred to a local practitioner for subsequent treatment. Then the patient backed out. Later a bill for $5 for the two consultations was sent and here is the reply:

> DEAR DOCTOR:—Having received this bill, and not being able to be out since seeing you, and as you did not do anything for my tooth, to pay for, being advised it must be a mistake, I will return it.
>
> Very truly, MRS. T.

So you see that a consultation in Chicago does not always mean that the consultant will get anything for his time or pay for his opinion.

DISINFECTION OF THE HANDS BY MEANS OF ESSENCES.

Eugenio Calvello draws the following conclusions from a series of experiments: 1. That washing with soap and water and alcohol does not make the hands aseptic, although it does diminish the number of germs to a great extent. 2. That the methods of Fürbringer and Ahlfeld do not result in complete disinfection. 3. That seven to eight per cent solutions of essence of cinnamon, eleven per cent of essence of thyme, and seventeen per cent of essence of geranium act precisely as do solutions of bichloride used according to Fürbringer's method, and should be given the preference in modern surgery, because they do not cause the alterations that bichloride does. 4. Nine per cent solutions of essence of cinnamon, eleven and twelve per cent of essence of thyme, and eighteen per cent of essence of geranium assure complete disinfection of the hands. 5. The essence of patchouli has no antiseptic powers.—*Giornale Internazionale delle Scienze Mediche,* September 15, 1900.

THE MOST IMPORTANT QUESTION OF THE PRESENT DAY IN DENTISTRY: "IS THE DENTAL PULP NECESSARY IN ADULT LIFE?"

In order to bring this most important subject before the members of the C. D. A. and their many dental friends, and obtain the consensus of opinion from our representative men, James G. Palmer, D. D. S., of New York, will read a paper in the affirmative on Monday, 8:15 P. M., at 943 Broad Street, Newark, N. J., January 21, 1901, and M. L. Rhein, M. D., D. D. S., John I. Hart, D. D. S., of New York; Dr. R. R. Andrews, of Cambridge, Mass., and I. Norman Broomell, D. D. S., of Philadelphia, Pa., will be present and take part in the discussion, and Charles L. Hungerford, of Kansas City, Mo., will send a written reply, while G. V. Black, M. D., of Chicago, Ill.; J. Leon Williams, M. D., D. D. S., of London, England; S. G. Perry, D. D. S., of New York, and Xavier Sudduth, M. D., of Memphis, Tenn., have been invited to contribute papers.

The meeting will be preceded by a banquet at 6:15 P. M., to which the profession is invited. A place will be reserved for all who send a postal to Dr. Chas. A. Meeker, 29 Fulton Street, Newark, N. J., by Saturday noon, January 19. The price per cover will be $1.00.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

661,911. Toothpowder box, Wm. H. Hall, New York, N. Y.

661,642. Toothpick machine, Joseph M. Hommel, Detroit, Mich.

33,544. Design, drawplate for swaging dental crowns, Benjamin B. Brewer and W. M. H. Burfeind, San Francisco, Cal.

662,070. Dental handpiece, Harry F. Jones, Camden, N. J., assignor of one-half to E. E. Smith, Philadelphia, Pa.

662,387. Dental headrest, Vincent W. Baker, Plainfield, N. J.

662,538. Dental appliance, Daniel O. M. Le Cron, St. Louis, Mo.

663,068. Dental elevator, Xaver Dodel, San Francisco, Cal.

663,178. Dental dam, Nathaniel Kuns, Santa Monica, Cal.

663,086. Dental handpiece, Hugh B. Mitchell, assignor to A. M. McCarty, A. Hoeffer and A. C. McDowell, Canton, Ohio.

662,957. Fountain spittoon, Horace G. Rose, assignor to A. M. McCarty, A. Hoeffer and A. C. McDowell, Canton, Ohio.

663,143. Supporting and elevating mechanism for dental chairs, Basil M. Wilkerson, Baltimore, Md., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

663,721. Artificial tooth, Robert Brewster, Chicago, Ill.

663,507. Dental rubber dam-holder, Charles W. Meguiar, Franklin, Ky.

Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

ALUMNI CLINIC OF CHICAGO COLLEGE OF DENTAL SURGERY.

The officers of the Alumni Association are happy to announce that the Eighth Annual Clinic to be held Wednesday, January 23, promises to be the largest and best in our history. This prediction may appear a little too sanguine to those who recall the memorable meetings of the past few years but to all such we would say, just reserve your opinion and wait for the event. Its success is not only an assured fact at the present time but each day adds to the already distinguished list of clinicians, and the ready responses that have come from men of note in all parts of the country is evidence of interest that is being taken in this growing organization which has ever been a credit to its Alma Mater.

Our organization as it exists to-day is one of which the College may well feel proud having among its members not only a long list of practitioners, but including also many professors and demonstraters in our educational institutions all over the land. We desire to urge its members to be present at this meeting. A glance at the list of clinicians and their subjects will convince you that you will be many times repaid for the effort. It is impossible at this time to announce a complete program, but a partial list of the clinics is given below.

This year we have been promised another event of unusual interest. Our college has had the good fortune to secure the original portraits of the renowned Dr. Horace Wells, Dr. James E. Garretson and Dr. Chapin A. Harris. A special meeting is to be arranged, at which time these portraits will be presented by Dr. B. Holly Smith, of Baltimore, Dr. James McManus, of Hartford, and Dr. H. C. Boenning, of Philadelphia. There will also be present Dr. V. E. Turner, of Raleigh, North Carolina, President of the National Association of Dental Examiners.

The annual banquet will be held in the evening. Let us once more urge our members to be with us this year. Come and renew old friendships, and assist us in extending a true Chicago welcome to our distinguished visitors.

L. S. TENNEY, President.

The following is the list of clinicians secured up to the present writing:

Dr. T. W. BROPHY, Chicago.
Surgical Clinic.

Dr. JAMES P. NICHOL, Philadelphia.
Abutments for removable crown and bridge work.

Dr. A. W. HARLAN, Chicago.
Will demonstrate the removal of a digested pulp by the use of a paste composed of Papain 1 gr., Glycerol 1 minim, and solution of Hydrochloric Acid 1 to 300. This is a new method of treating a dead pulp and will probably revolutionize such treatment, especially the mummifying process.

Dr. W. E. GRISWOLD, Denver, Colo.
Table Clinic—Removable bridge work.

Dr. FREDERICK J. CAPON, Toronto.
Porcelain Contour with wire retention.

Dr. E. J. PERRY and Dr. B. J. CIGRAND.
An exhibit in prosthesis.

Dr. GEO. W. COOK, Chicago.
Replantation for cure of pyorrhoea.

Dr. B. G. MAERCKLEIN, Milwaukee, Wis.
Large gold filling, using electric mallet.
Dr. W. H. DWIGHT, Le Mars, Iowa.
A detachable facing.
Dr. F. F. FLETCHER, St. Louis, Mo.
A table clinic on method of supplying lost anterior tooth by anchoring to posterior crown.
Dr. GEO. B. PERRY, Chicago.
Combination filling.—Starting with William's Crystalloid Gold No. 2. Finishing with William's Gold and Platinum folds No. 2. Annealed with a Custer electric annealer.
Dr. CARL BECK, Chicago.
Surgical Clinic.
Dr. JAMES W. CORMANY, Mt. Carroll, Ill.
Anterior proximal filling in central incisor using Rowan gold and platinum folds No. 1, thickness 30.
Bonwill Mechanical Mallet No. 2.
Dr. H. J. GOSLEE, Chicago.
The construction of a porcelain bicuspid crown.
Dr. J. P. CARMICHAEL, Milwaukee, Wis.
Demonstration clinic on building the bite to restore natural occlusion in crown and bridge work and
Exhibit of devise for measuring the relative position of abutment teeth in crown and bridge work.
Dr. A. M. HEWITT, Chicago.
The Combination of "Sterion White Alloy" and gold in large fillings.
Dr. J. E. KEEFE, Chicago.
Will demonstrate his method of saving a badly decayed root by replantation.
Dr. L. W. NEVIUS.
Extracting under Nitrous Oxide.
Dr. C. P. PRUYN, Chicago.
Root canal filling, using sandarac varnish and gutta percha points.
Dr. W. V.-B. Ames, Chicago.
Refitting dentures with new process oxyphosphate of copper.
Dr. J. J. WRIGHT, Milwaukee, Wis.
An appliance to keep field dry while setting crowns and bridges.
Dr. L. W. SKIDMORE, Moline, Ill.
Demonstration in the use of J. B. Morgan bridge attachment.
Dr. J. E. NYMAN, Chicago.
Preparation of root for crowning.
Dr. W. H. G. LOGAN, Chicago.
Surgical Clinic.
Dr. ROBERT GOOD, Chicago.
Pyorrhoea Alveolaris (Younger Method).
Dr. R. C. BROPHY, Chicago.
Baking continuous gum case, using Close's body and gasoline furnace.

Dr. RUDOLPH BECK, Chicago.
The adjustment of a gold crown with a special instrument, designed by the clinician.

Dr. A. G. JOHNSON, Chicago.
Cleavage of enamel preparatory to crowning, with instruments of the clinician's own design.

Dr. C. F. BRYANT, Chicago.
The construction of a partial denture of continuous gum.

Dr. CARL CASE, Chicago.
An exhibit of Orthodontia appliances.

Dr. L. C. BORLAND.
Will exhibit dissections made by students of the College.

Dr. R. J. CRUISE, Chicago.
Replantation for the cure of pyorrhoea.

Dr. R. B. TULLER, Chicago.
Anterior filling of moss fiber gold.

Dr. A. F. JAMES, Oak Park, Ill.
Amalgam filling with matrix.

Dr. W. T. REEVES, Chicago.
Porcelain inlay.

Dr. G. W. JOHNSON, Chicago.
Prosthetic technic exhibit.

Dr. J. R. WATT, Chicago.
Crown and bridge, technic exhibit.

Dr. A. B. ALLEN, Chicago.
A device for holding porcelain facings while grinding.

Dr. W. A. HECKARD, Indianapolis, Ind.
Will present a new gas apparatus of his own invention.

THE THIRD PAN-AMERICAN MEDICAL CONGRESS.

The third Pan-American Medical Congress will convene in Havana, Cuba, February 5, 1901. An invitation is extended to dentists who may desire to attend and read papers before Section on Dental and Buccal Surgery. The Committee on Transportation has made the following report on rates for delegates at the present time: The Southwestern Passenger Association has authorized a rate of one fare for the round trip to Port Tampa, Fla., plus $2.00 (exclusive of Pullman berths and meals), connecting with the Peninsula & Occidental Steamship Company at Port Tampa, which has authorized a rate of $36.50 round trip from Port Tampa to Havana, including meals and berths in each direction. This makes the rate through to Havana from Washington, $70.05; from Cincinnati, $68.30; from Louisville, $67.55, and correspondingly low rates from intermediate points. The Trunk Line Association has authorized excursion fare to Washington, added to the fares authorized by the Southwestern Passenger Association, which includes all regular ticketing routes. The Central Traffic and Western Passenger Associations have authorized regular winter tourist rates. Delegates from these territories may find it to their interest to pay local fare to Cincinnati or Louisville and use the authorized rates from these points as outlined above. The Ward Line steamers from New York have authorized a rate, including meals and stateroom in each direction of $60.00 round trip from New York to Havana, sailing Wednesday and Saturday; time, five days in each direction. Those who use the Ward Line to Havana, paying $60.00 for the round trip, can return either from Port Tampa or Miami by rail. By returning the unused portion of the ticket a rebate of $20.00 will be received. These tickets must be purchased from Havana over the Peninsula & Occidental S. S. line to Port Tampa or Miami, and then by rail. No rates so far have been arranged for the New England territory. The United States Fast Mail leaving Washington over the Southern Railway at 11:15 a. m., arrives at Port Tampa, Fla., 10:30 p. m. the next evening, making connection with the steamer leaving Port Tampa at 11 p. m., arriving at Havana the morning of the second day. Extra sleepers will be run from New York over the Pennsylvania Railroad, Southern Railway and Plant System to Port Tampa. The train leaving Cincinnati over the Queen & Crescent route at 8:30 a. m. will arrive at Port Tampa at 10:30 p. m. the following day, connecting with the same steamer. The train leaving Louisville over the Southern Railway at 7:45 a. m. connects with the Cincinnati train at Lexington, Ky., at 10:45 a. m. All these schedules unite at Jacksonville, Fla., and go through to Port Tampa and Havana. It is suggested the delegates from the East mobilize through Washington, and those from the West through Cincinnati. Those wishing to attend will please send their own names and addresses, and of their party as well, to Eugene S. Talbot, 103 State Street, Chicago, Ill. The information will be forwarded to the Chairman of Transportation so that sleeping car and steamer accommodations may be reserved.

EUGENE S. TALBOT,
Secretary, Section on Dental and Buccal Surgery.

KOCH'S REPORT ON MALARIA.

Koch publishes in the *Deu. Med. Woch.* of December 6 and 13, a summary of the results accomplished by his malaria expedition. He reiterates that examination of the children is the best means to determine the presence and character of malarial infection in a place. In the peculiarly isolated aboriginal villages he visited in eastern Africa, he found it almost universal among the small children. A certain proportion succumb, but the remainder as they grow up seem to acquire a natural immunity by the fifth to the tenth year and after that age develop into remarkably fine physique and health, even in the most intensely malarial localities. The children are never treated for malaria; quinine is never given them, and consequently the immunity attained can not be compared with other regions where the natural course of the disease and the process with immunization are interfered with by medicinal measures. He found among the islands of the Bismarck archipelago that some some of the islands were entirely free from malaria while others had only one or all three forms. The immunity acquired in an island where only the quartan variety prevailed, for instance, did not protect against the tertian or tropical fever or vice versa. He is convinced that man and mosquitoes are the only hosts of the parasites, and that by curing the infected children and all, even the deceptive, latent cases in adults, malaria can be exterminated. He recommended 1 gm. quinine in solution, taken on a nearly empty stomach in the morning, every tenth and also eleventh day. If fever still persists, the dose can be increased to 1.5 gm., reducing the interval to one and two days. He warns that quinine is not absorbed unless the gastric reaction is acid.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE SCIENTIFIC ARTICULATION AND OCCLUSION OF ARTIFICIAL TEETH.*

BY E. J. PERRY, D. D. S., CHICAGO, ILL.

There is probably no subject of equal importance in dental prosthesis so fearfully neglected or so little studied as the articulation of artificial teeth. Indeed, there is no subject of more than parallel importance to be considered by the prosthetist. I would have you discriminate between the art arrangement of the teeth and the articulation of them, although the foregoing remark applies to both. The art arrangement of artificial sets is almost wholly limited to the six oral teeth. By the articulation of artificial sets I have special reference to the arrangement of their grinding and cutting surfaces. The laws underlying their arrangement, with reference to mastication, are purely mechanical. They are exact and perfect when understood. A study of the philosophy of mastication and the anatomy of the lower jaw will reveal them. The lower jaw forms with the temporal bone, a joint called the temporo-maxillary articulation. This joint is formed by the condyle of the lower jaw, which is oblong in shape and convex from side to side and antero-posteriorly, resting in a concavity of the temporal bone called the glenoid fossa. This, it can be seen, permits of three distinct movements, the hinge motion, the gliding motion, and the rotary movement. These latter two *may* be one, making what is called the mandibular jaw of the vertebrate. The lower jaw is endowed with these movements to permit the proper incising and grinding of the food of man. When all the natural teeth have been lost and artificial ones are to be constructed, these movements of the lower jaw are of obvious and even serious importance. When the condyles are at rest in the glenoid fossae, the mouth closed, the teeth are in the position of complete occlusion. This position is the only one in which complete occlusion can occur. And it becomes of very great importance in obtaining the occluding bite, which, when the two jaws are edentulous, is fraught with great difficulty in some cases. By the philosophy of mastication, I mean the operating of the lower jaw in the process of eating. In the use of these three movements the hinge, the gliding and the rotary movement, the tongue has an important office to perform. Says Dr. Bonwill: "To obtain all the surfaces for mastication on the left side, the bolus of food is thrown by the tongue to that side and between the teeth and cheek, and when the lower jaw is thrown to the left, all the surface that is possible of the teeth from the central incisors to the second molar on that side present the greatest proportion of articulating surfaces. And in carrying out the lower jaw for action, the left side in the upper, cutting on its buccal side and crushing on its palatal; and in the lower set the lingual are cutting and the buccal crushing. It is the simple mechanical law as applied by man when he made the first pair of millstones which he created as there was nothing in nature he could have seen to give him the idea. When a pair of millstones are grooved to the left from the center of the stone, and the upper stone is revolved to the right, then the grist when thrown into the central opening of the upper stone is gradually ground and carried to the periphery of the stones where it is being constantly cleared from between the stones. Whereas if the grooves ran the other way the grist would simply clog. The elephant's teeth are grooved to perform just this beautiful piece of work, which could have been done in no other way by either God, nature, evolution or man. It is mechanical law and that of motion to obtain a certain result for the perpetuation of the organs themselves. The life of the whole organization and the grooves, fissures and tusks are so arranged by the intelligent Designer and Masterworkman, that when each are in their normal position in the jaws all surfaces wear alike and the shapes are kept in harmony." It should be plain to all that if the teeth were arranged to strike on their occluding surfaces without any reference to the rotary and gliding movements of the lower jaw, that the practical results in mastication would be, indeed, very limited. We often see artificial teeth so arranged. In fact, this is mostly the case. The lower jaw of the vertebrates would not have been endowed with these movements and the teeth would have been altogether different in form if the grinding function was not intended. The cusps, grooves, cutting or incising, and tearing surfaces of the teeth all indicate the uses to which nature intended they should be put; and the peculiar and marvelous movements of the lower jaw indicate the character of the teeth and the kind of food the animal is to subsist upon. There is a harmony here as elsewhere in nature, in the work of the Great Designer. I wish here to refer to the great work of the late Dr. Bonwill of Philadelphia. I feel that the profession owes to Dr. Bonwill an unpaid bill; a debt of gratitude. And while his methods and conclusions may be revised, he is certainly entitled to the fullest credit for his invention and discovery. Morse, made the first telegraph; Howe, the first sewing-machine. Their work has been revised, added to and subtracted from, until the original inventions or discoveries are not now recognizable as theirs. Yet, who denies them the glory, or withholds from them the credit. Their fame will endure on earth until the records of civilization are lost. Science is but formulated common sense and truth; truth, which has always been truth. Dr. Bonwill does not claim to be the designer of the anatomical articulator, only the first to apprehend the design of Another. In speaking of his

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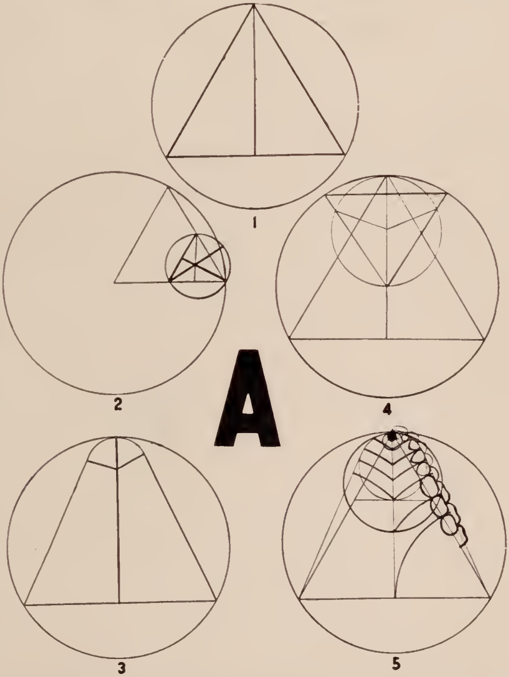
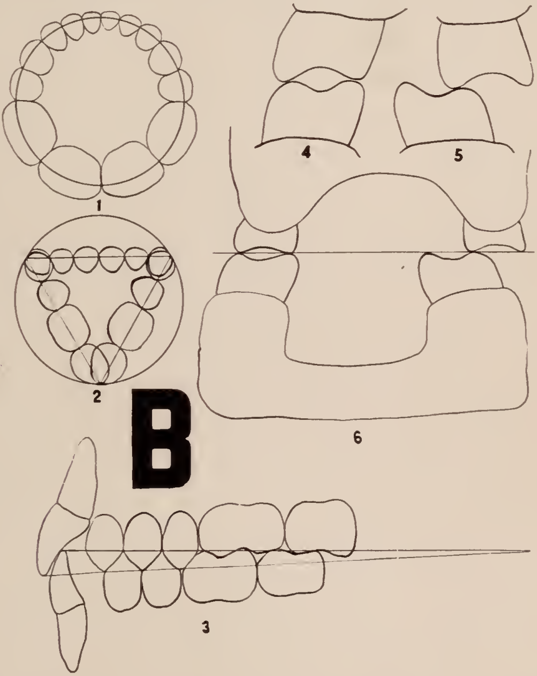
* Read before the Odontological Society of Chicago.



articulator, he says: "It is not an invention, but a simple and complete reproduction of the mechanism of the human jaws; and it is the only thing of a mechanical nature I ever stole, and that was from Divinity the Originator of it." Again he says, "One point of very great importance has not been noticed in general or special anatomy, the peculiar tripod arrangement of the lower jaw, forming an equilateral triangle," and again, he says: "Another unobserved fact where law is expressed, where there is an overbite, or an underbite; just in proportion to their depth will be the length of the cusps, of the cuspids, bicuspids and molars." These foregoing inventions and discoveries with their elaborations and practical applications form the sum total of Dr. Bonwill's work in this branch of prosthesis and is now left to his profession as a legacy, which will bless humanity as long as scientific dentistry shall be; and as the profession shall grow into an appreciation of the merits of this great mechanic, so shall prosthesis be exalted to that high plane which the needs of humanity, the unsatisfied demand, and the hitherto unsupplied wants of mankind demand. There is, at this time, in view of the "passing over to the beyond" of Dr. Bonwill a sad but sweet pathos in his last appeals to his brothers in his profession, to come up higher to where he stood.

In the *Items of Interest*, of December, 1899, after finishing up a continued article, he says: "It is worthy of note just here that the first essay on articulation was submitted to Dr. J. H. McQuillen, in 1858, then editor of the Dental Cosmos. It was read before the Delaware Dental Society; it was refused publication, no reason being assigned, later, it was presented by Dr. McQuillen at the American Dental Association at Niagara Falls to the profession, accompanied by a short article explanatory and a model. The second essay was read June 6, 1885, and given to the *Cosmos* soon after, and Dr. J. W. White, then editor, refused to publish the article unless he were allowed to cut two-thirds of it out after his own idea of editorial scissors, to which I most indignantly replied, he was not capable of doing from any standpoint as editor, M. D., or D. D. S. Later on Dr. E. C. Kirk, the present editor, asked me to let Mr. Hise rewrite the article, and after a private interview of three hours which I gave him, not a word did they say, save that I was not able to show up clearly my own inventions after forty years with it. It was, however, published in the *Dental Office and Laboratory,* in 1886, but it failed to reach the spot. The American System of Dentistry has a copy of the 1885 article, which Dr. Litch refused. But the publishers demanded he should place it in that work, etc." Concluding, he says: "Let me repeat what I have often said before in interviews and lectures that the majority of dentists can never grasp it unaided by my personal instructions in the laboratory where I may have each and all do the work in my presence with my models before them." Speaking of the foregoing history, Dr. Ottolengui, in a foot-note says: "He returned to the author his article requesting that it be cut out, but Dr. Bonwill returned it endorsed: 'Ottolengui please let this go in." Says the editor: "This is sad reading when the author is no more, yet it is symbolical of this unique man that his last professional writing should by chance close with an invitation to others to come and learn of him."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The importance of Dr. Bonwill's work is pressed home by the opening paragraph in his article, just referred to, where he says: "For a third time I here revise all that I have said and done upon this most important of all my life's work and discoveries, and upon which I am willing to die, feeling that it was as pure a revelation and inspiration to me as the laws of motion were to Kepler and the further continuation of those laws in establishing gravitation by Newton." His own written words establish a claim for him of modesty and humility; both prime factors of true greatness. He says: "The only mystery to me is that I, a poor, uneducated man, without any knowledge of geometry, should have been permitted to work out such a problem in the middle of the 19th century, when there was no precedent upon which I could found a single fact as a starting point." All through Dr. Bonwill's writings there runs a deep religious vein. He wrote from a high plane. He was always a dentist; he had but one thought and that was for his profession. I cannot pass on to the further consideration of my subject without assisting with my own humble and feeble hands to place a wreath of roses of enduring fragrance upon his grave. He gave to us the anatomical articulator. a marvel of ingenuity and simplicity, yet, only a plain articulator unless its significance be explained. Dr. Bonwill observed that the lower jaw formed an equilateral triangle, always, when a line drawn from the center of one condyloid process to the other is four inches on the average and from the same point to the median line of the lower centrals at the cutting edge is also four inches, making an equilateral triangle. This equilateral triangle he found was the basis for all his conclusions in which geometry was the means of explanation. These geometrical problems worked out in several ways, and while of little useful or practical significance, they are noteworthy. For instance, an equilateral triangle can be found by drawing a line from the cutting edge of the lower central incisor at the median line to the center of the second molar on its distal surface to the same point across the mouth. Again, the two bicuspids and two molars on either side lower jaw, measure the same in their greatest diameter as do the four incisors and two cuspids, making an equilateral triangle, etc., etc., until can be figured out by geometry the width and position of each tooth showing a design laid in geometry by the Great Designer of all creation—a science too deep for me, at present at least, and too great to be elaborated here. The original proposition of the first equilateral triangle, however, is of practical significance to us. Dr. Bonwill found, by examining 2,000 skulls, the average distance from the center of the condyloid process to the cutting edge of the lower central incisor at the median line, was four inches. So, in using the anatomical articulator, we measure from the condyle of the articulator to the wax on the lower bite at the median line and so place the case on the articulator thus obtaining the models in a position corresponding to their anatomical relation. We are now ready to set up the teeth, feeling that we are going to work on the model of the living jaws with all their peculiar movements. We can proceed to so arrange their cutting and grinding surfaces by suggestions from nature herself, and this is the practical significance of the anatomical articulator. To begin, the trial or occluding bite is a matter of serious moment. I cannot condemn the mush-bite too strongly. The mush-bite is abominable, disgusting, disgraceful and criminal laziness. It is not above the cheapest dental parlor method. The model obtained, a firm plate of ideal base-plate material should be made to fit accurately, a rope of pure wax, formed on the ridge of the upper model first. This should be squared and built out, carved, etc., to correspond to the fullness, length etc., required, to be found exactly by repeated trial in the mouth, and right here suggestions as to size, color, etc., are to be sought of the patient. After the upper bite is made then the lower. Advantages: The ideal base-plate, if made properly, will fit closely, draw up to the mouth as tightly as the rubber plate. The probability of the patient giving a normal occlusion is thereby augmented immensely I know of no way or of any infallible rule of securing a true occluding bite. Experience is the only teacher I know of. The bite obtained, the case is placed on the articulator, using the equilateral triangle by setting the models so that the wax at the median line of the lower central incisor cutting edge shall measure four inches from the dot on the condyle of the articulator, equi-distant at the heel of the model, or so that a line drawn from the median line at the lower incisor cutting edge to the dot on the condyle of the articulator will just include the lingual cusps of the first molars on each side in normal jaws. This can be proven by drawing a line from the exact center of the first molar to the same molar opposite, thence to the cutting edge of the lower central incisor at the median line. If a perfect equilateral triangle be found the position of the models are correct. The eye, however, is sufficient. The models in position, we proceed to set up the teeth. As to length of cusps they can easily be found by the overbite. If the overbite be great the teeth are to have cusps of corresponding length, and the compensating curve, will be correspondingly greater. If the bite at the incisors be even then no cusps are indicated and the compensating curve is almost absent. It will be seen at once that this must be true to accommodate the rotary movement of the jaws. The grinding surfaces must all be ground, no glazed surfaces are adapted to the purpose. The grooves may be mostly ground before any are set up after the laws of mastication and the depth of the overbite is known. When the jaw is thrown to either side, say to the left, the cusps of the opposite side should strike in at least two places that the plate may not become unseated upon pressure and when the teeth slide into the largest occlusion from side to side, the grinding and crushing and the incising surfaces are all brought into their largest activity after the very fashion of nature herself. If, after the sets have been placed in the mouth they are found to be slightly incorrect, place a rope of soft wax on the lower teeth and let the patient bite firmly, then put them on the articulator as before; mix up in sweet oil a paste of red oxide of mercury; paint the cutting edges of either set; close the articulator and where the opposing teeth touch you can see by the red spots, thus continue to grind until a perfect occlusion is obtained, after which grind for the articulation. The satisfaction to the patient of scientifically occluded and articulated teeth is a source of deep joy to the dentist who desires not only to see his work go, but to give the greatest maximum of usefulness to the patient himself.

SOME TROUBLES OF THE SOFT TISSUES OF THE MOUTH.*

By A. H. Peck, M. D., D. D. S., Chicago, Ill.

Inflammations of the soft tissues of the mouth may be either systemic or local as to cause. The majority of cases which we are called upon to treat, as practicing dentists, are probably caused by local conditions. However, some of the most serious conditions that present for treatment are manifestations of constitutional diseases.

The first class of cases I will consider is found especially in the mouths of children, but not always, for the same conditions are not infrequently found in the mouths of adults. This condition is brought about purely by a failure on the part of individuals to keep their mouths clean. In this class of cases there is an accumulation of micro-organisms, of mucus, particles of food and other forms of debris which form a coating over the gums and mucous membrane generally. In dealing with such cases as these usually a good moral effect upon the patient is had by instructing him to secure a tooth brush and a suitable dentifrice to be used diligently for a number of days before giving the case personal attention. If, for any reason, this does not seem advisable, one of the best agents that can be used for the removal of these accumulations is peroxid of hydrogen, or some one of the agents of this class, being reduced perhaps one-half with distilled water. This should be used with a pellet of cotton and the pliers, thus thoroughly cleansing the mucous membrane with it. It will cut the material more effectually and cause its removal more thoroughly than any other agent that may be used. The use of pure peroxid for this purpose is not desirable. From pure peroxid are liberated anywhere from ten to fifteen volumes of oxygen, which will, under certain conditions, burn or destroy the soft tissues. Diluted one-half there will be from five to eight volumes of oxygen liberated, which amount is sufficient. This agent, however, will not be as effective in removing the foul odors from the mouth as will some others. The use of a two to four per cent solution of permanganate of potassium is very effective by way of removing the odor.

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*Read before the Odontographic Society, Chicago, Ill.

Not infrequently in the use of burs in the engine, of discs or strips or various other forms of instruments in the hands of careless operators ugly wounds giving rise to severe forms of inflammation occur. Especially is this true if infectious material is carried into the wound by the instrument. And not infrequently, in connection with this form of trouble, much swelling results. The use of hot carbolized water is an excellent form of treatment. This should be thrown upon the inflamed parts for some minutes by means of a syringe, and is especially useful by way of relieving the pain and the congested condition of the parts. The use of a thin paste of eucalyptol and iodol, or aristol, will be found beneficial. If the eucalyptol is found to be unpleasant to the taste of any, a small quantity of some other oil may be added, such as wintergreen or cloves, for the purpose of modifying the taste of the eucalyptol. In using this mixture it should be rubbed into the wounded part, carefully but thoroughly, and permitted to remain for a few minutes before the saliva comes in contact with the wound. The use of campho-phenique,—camphor and carbolic acid,—in such cases as these will be beneficial. As a side thought, this agent will be found to be one of the best in controlling pain occasioned by the irritation, and frequently the inflammation arising from the excess of cement forced under the gums in setting crowns and bridges. When used for this purpose the excess of cement should be completely removed, the gums dried as thoroughly as possible and saturated with the agent for a few minutes. If any have not used tincture of myrrh for this purpose, you will find it to be an excellent remedy.

In inflamed, swollen conditions of the tissues over erupting third molars, which not infrequently give rise to severe pain, the use of the eucalyptol and iodol, or aristol paste referred to above, will be beneficial. This should be packed under the tissue as thoroughly as possible and left for some time. In these cases the use of hot carbolized water, as indicated above, previous to the use of the paste, is useful by way of reducing the inflammation and causing a cessation of the pain. In cases where it does not seem advisable to remove the gum tissue, and suppuration has resulted, the pus must be thoroughly evacuated and the parts treated as indicated above, with the addition of the use of diluted peroxid of hydrogen.

Another condition of the mucous membrane which we are rather frequently called upon to treat is what are called *canker sores.*

As to the cause of canker sores, I feel warranted in making the statement that our knowledge is not definite. Some claim they are caused solely by local conditions, while others claim that they are manifestations of systemic conditions, especially disorders of the stomach. The fact remains that in connection with their treatment in some cases local treatment is all that is necessary to effectually do away with them, while in others local treatment will do away with them only for a time, when they will recur; and in some of the cases where they show a tendency to recur, certain forms of systemic medication certainly do good, while in other cases the same kind of systemic treatment seemingly has no effect. From this it would seem the above statement, that our knowledge as to their cause is indefinite, is a just one.

In mouths in which these sores do not show a disposition to recur carbolic acid is very efficient in removing them, and if the statement of some be true, that they are caused by an accumulation and retention of micro-organisms on the part, this would seem to be an excellent form of treatment. Stick nitrate of silver, rubbed into the sore, is frequently effective. When these agents are thus used locally they must be confined to the sore itself—i. e., care must be exercised not to permit the agents to spread over the adjacent parts. Resorcin is also useful in the treatment of many of these cases. When resorcin is used it should be thoroughly pulverized and used full strength; pack it onto the sores, rubbing it in as thoroughly as may be, and let it remain for a few minutes. Tincture of myrrh I have often found useful. A drop or two of oil of cassia, used on a tooth-brush two or three times a day, is effective in some cases in preventing recurrence.

When there is a disposition to the recurrence of canker sores, Dr. Black has said that the use internally of oil of cassia is one of the best forms of systemic medication. He tells us that he has succeeded in preventing the recurrence of canker sores in many cases by the use of oil of cassia when he has failed with the use of all other drugs. In using oil of cassia for this purpose, twelve to fifteen drops should be used in a half tumbler of water and a teaspoonful taken three times a day before meals. This should be continued, to secure permanent results, for three or four weeks.

More serious forms of trouble of the soft tissues of the mouth which we are called upon to treat are of constitutional origin, and one is occasioned by ptyalism, or mercurial poisoning. This is too frequently one of the most aggravating conditions to treat that we come in contact with. The system of the patient is saturated with the poisonous drug and the soft tissues about the teeth suffer severely in many instances, not infrequently sloughing to a considerable extent, the teeth being entirely lost in severe cases of long standing.

In connection with the local treatment of these cases it is absolutely necessary that the patient receive proper constitutional treatment, which latter should generally be attended to by the family physician.

By way of local treatment, all calcareous deposits or other causes of irritation must be thoroughly removed and the parts be kept free from them in the future. This done, the use of stimulating and astringent antiseptics to keep the parts as clean as possible and cause as much condensation of the tissues as possible, is indicated.

One of the very unpleasant features in connection with dental practice is the care of *syphilitic sore mouths,* so-called. Syphilis, as we all know, is a constitutional disease, and to be able to unerringly recognize its local manifestations,—called syphilitic patches,—of this accursed disease of humanity, on the oral mucous membrane, I consider one of the most important of our qualifications as practicing dentists. I believe I am warranted in making the statement that relatively a large per cent of the dentists who attend these meetings, to say nothing about the large number who are practicing in Chicago, will tell you that they feel positive that they cannot correctly differentiate in the diagnosis of "syphilitic patches" of the mucous membrane of the mouth and some other forms of disease, or of manifestations of disease, that obtain. When we consider the awful nature of this disease, and the ease with which it may be transmitted from one patient to another, the necessity to be able to recognize it when present certainly must come home to us with much force. I wish I might be able to impress all with the necessity of studying this disease so that no mistake would be made in the diagnosis of its local manifestations.

It may be stated, as a general rule, that individuals suffering with syphilis will hardly ever escape a local manifestation of it in the mouth; occasionally they do, but the rule is otherwise.

The "syphilitic patches" on the mucous membrane are characterized by a slight raising or elevation from the surrounding surface of the tissue. The sores themselves about the edges are slightly raised, and if of long standing are more or less everted. A serous fluid is continually exuding from the sore, which, by the way, may be termed the potent source of infection. There is more or less sloughing of the parts and the surface of the sore is continually covered with a slimy mucus frequently approaching in appearance that of pus. These sores may be pertinently termed ulcerating sores. They may be found on the inner surfaces of the cheek; they may occur on the surfaces of the tongue or on the gum tissue, either buccal, labial or lingual, or on the mucous membrane approaching the fauces; and again, they may occur in the same mouth in all of these locations.

In treating such cases as these, during the time that infection is most liable to be transmitted from one to another, we cannot exercise too much caution by way of cleansing our instruments. They must be thoroughly cleansed and sterilized with the most certain means. Absorbent cotton or bibulous paper or napkins and everything of this character should be destroyed. I would advise by way of precaution that no napkin, even, which is used about the mouth of a person suffering with this malady be sent back to the wash; throw it away or destroy it. Especially is it necessary that we use extreme care in dealing with such cases from perhaps the fiftieth day after the inception of the disease until the tertiary term is thoroughly inaugurated. This is the time most likely for infection to be transmitted from one person to another.

Of course, it is absolutely necessary that people suffering with this trouble receive proper constitutional treatment. Local treatment will accomplish almost nothing in an attempt to do away with or to control these sores in the mouth, if the individual at the time is not receiving proper constitutional treatment. These people should always be sent to their physician for the systemic treatment.

As to the local treatment, it is much more simple, perhaps, than many of us imagine. The only thing to be done, in fact the only thing that one can do, is to keep the mouth as clean as possible. All irritating substances about the gums by way of calcareous deposits, rough edges or margins of teeth that are decayed; in short, anything of this nature that may serve as an irritant to the soft parts, either cheeks, gums or tongue, must be removed. This done, the soft tissues should be cleansed as thoroughly as possible with dilute peroxid of hydrogen. The sores should be thoroughly bathed with a two-per-cent solution of permangate of potassium, which is an excellent agent for this purpose. The use of the tincture of iodin is always attended with good results. The diligent use of any of the potent, non-irritating astringent, antiseptic mouth-washes is essential. It is almost absolutely essential that the use of liquor and tobacco be done away with. I speak of this because I know it is too frequently the case that the general practitioner does not concede the necessity of this in as many cases as he should. To illustrate: Not long since a gentleman was referred to me by his physician for local treatment of this disease. His physician had been treating him for some time, but had said nothing to him about the use or non-use of liquor and tobacco. The gentleman was an inveterate smoker and was in the habit of taking liquor whenever he wanted it, which, under the circumstances, he evidently wanted too frequently for his own good. The local manifestations in this case were among the worst I have ever seen. At first he was unwilling to discontinue the use of liquor and tobacco. I explained to him the necessity of so doing, but inasmuch as his physician had said nothing about it he was hardly inclined to accept my judgment. I treated his mouth for a time, but with little success. Finally I prevailed upon him to quit the use of liquor and tobacco for a time, when I had little difficulty in controlling the local manifestations with practically the form of treatment above indicated.

There is one other condition of the mucous membrane of the mouth to which I wish to call your attention, and perhaps, next to the "syphilitic patches," it is the most important that we understand.

It is an affection called *leucoplakia,* a word derived from Greek characters, meaning in the abstract, *white* and *surface.*

This affliction of the local parts is characterized by the appearance on the mucous membrane, either of the cheeks, of the tongue or of the fauces, of white patches, the surfaces of which are perfectly smooth, presenting somewhat of a glossy appearance. It is stated by some that these patches occasionally occur with a little color, possibly a little reddish or bluish tinge, but before progressing very far they become, in the abstract, a pearly white in color.

The cause of these patches is not well understood; in fact, we may say that we know very little of the cause of this disease. Some ascribe it to certain forms of skin disease, such as psoriasis, herpes zoster, and other forms. Others claim that it is due almost exclusively to syphilis, especially of the secondary character, while others. again, claim that the mucous patches are due almost exclusively to local causes.

It seems to be quite conclusively proven that syphilitic disorders have little to do in the causation of this disease. At the same time it seems we are not warranted in stating that local irritations of various characters are wholly responsible for the beginning of the difficulty; yet, it is true that they play an important part by way of continuing the pathological condition. Many writers upon the subject place the use of tobacco, especially smoking, as an important factor in the causation of the disease, the irritating effect from the volatile and empyreumatic oils liberated in smoking-tobacco serving especially to continue the irritation of the parts. Others claim that the use of hot pungent drinks of various characters, also spirituous liquors, are potent factors by way of aggravating the trouble. It is also true that any mechanical form of irritation in the mouth, such as rough margins of cavities, artificial dentures, clasps, etc., coming in contact with the mucous patches, on the surface of the cheeks, especially, continue their progress.

As stated above, these patches at first are small. They, however, often spread over the tissue and may occupy an area extending from the corner of the mouth back to the fauces; they may cover the entire dorsum of the tongue; they may include the entire buccal surfaces of the mucous membrane of the gums.

It is important that we be able to recognize this condition, and also important that we be able to correctly differentiate in the diagnosis between this and the patches of secondary syphilis, in some respects the one resembling the other.

I will state in this connection, according to the teaching of some, that there exist two patches of leucoplakia,—one of a milky white color, sometimes a little bluish in appearance, which variety, whenever present, is nearly always the result of secondary syphilis. These patches will be somewhat raised from the surrounding surface of tissue, this being one of the chief characteristics of syphilitic patches in the mouth. The other variety, leucoplakia proper, seems to be present and is present in the absence of any specific trouble, so that it may be positively stated that it is in no wise dependent upon the presence of syphilis or any other specific systemic disorder, the patches of which are never raised above the surface of the surrounding tissue, the tissue affected always remaining on a level so to speak, with the surrounding parts. There is no tendency in the leucoplakia patches proper, in a majority of cases, to develop soreness or tenderness. Syphilitic patches, even of the secondary variety, are almost invariably tender to touch, and, as stated, there is exuding from the margins of the patches a serous fluid, there also being more or less tendency to sloughing. In connection with the patches of leucoplakia proper there are none of these manifestations.

It is doubly important that we understand this disease for the reason that it sometimes results in a dangerous affliction to the patient. If neglected, if not properly attended to, the patches progress and are liable to verge into carcinoma. Many cases,—I may say many, there are quite a number on record where carcinoma, cancer has developed, the mucous membrane of the mouth for years preceding being afflicted by the presence of these patches of leucoplakia. In this fact lies the greatest importance of our being able to recognize the affliction and at least to warn the patient of what may occur if neglected. Patients generally are apt to attach little importance to the presence of leucomatous patches, for they may continue for years without causing any special inconvenience.

The treatment of this affliction is not satisfactory in all cases. It has been quite conclusively proven that no form of systemic treatment does any special good, except in the variety which is connected with secondary syphilis. In leucoplakia proper the treatment, at best, can only be local. If taken when first appearing, or in the early stages of the trouble, it can be cured, in the majority of instances. One author advises the use of pure balsam of Peru, to be applied locally to the patches as often as one is able to see the patient. This should be retained in contact with the tissues for ten or fifteen minutes. He claims that he has by this form of treatment alone cured many cases. Another form of treatment, advised and used by some, is equal parts of tincture of aconite root and iodin, drying the patches and applying the mixture thoroughly every two or three days. This treatment must be continued for some time to effect a cure. Another form of treatment, advocated by a prominent practitioner, is simply tincture of myrrh. He claims that by the use of tincture of myrrh alone he has cured many cases.

As indicated above, all cases, even if they are taken in the first stages of the inflammation, (for we may truly call it an inflammation; it is by most authors termed a chronic superficial inflammation of the mucous membrane,) do not yield to treatment. Some of them are very obstinate and seem determined to progress in spite of anything that can be done. All forms of irritation should be thoroughly removed from the mouth, whether mechanical or chemical; the use of acids, acid mouth washes, anything of this nature which will tend to produce local irritation of the soft parts, must be done away with, and especially is it important in the treatment of this affliction to do away with the use of tobacco, either smoking or chewing. If any of these forms of indulgence are permitted to continue we cannot hope for the best results in the treatment of leucoplakia.

Those cases that are obstinate, that do not yield to treatment, continue to develop until finally the surfaces of the sores become more or less abraded and develop tenderness; they begin to slough and, as stated, cancer is likely to follow which condition no one will deny is not at all desirable.

This affliction rarely ever occurs in the mouths of individuals under twenty years of age; i. e., leucoplakia proper; in fact, I do not know of the record of any case in the mouth of an individual under that age. It is likely to occur from this age up to sixty. If a person has become fifty-five or sixty years of age without the development of leucoplakia, it is likely he will never be troubled with the affliction, although there are a few cases on record where persons at the age of seventy have been afflicted with it. It is rarely ever seen in the mouths of women.

I speak thus briefly of this disease that we may be constantly on our guard and remember, whenever we recognize it in the mouths of our patients, the importance of prompt treatment and what may result if treatment is neglected.

MAKING THE MATRIX FOR A SEAMLESS CROWN.*

By J. H. Prothero, D. D. S., Chicago, Ill.

In the past few years, more especially in the last two or three, considerable interest has been manifested in the construction of crowns by the seamless method.

It is claimed by those most enthusiastic on this subject, that more aesthetic results can be obtained by this system than in any other way.

I am not over enthusiastic myself, nor do I believe it is the *only method,* as some claim, for producing artistic crowns.

Well fitting, serviceable, and aesthetic crowns have been and are being made by the band and swaged cusp system that are doing as good service, and look as well or better than the average seamless crown. I think, however, that those who have had experience with both methods, will admit that each one has its particular points of value and place where it can be used to better advantage than the other.

It occurs to me, that the seamless system is most valuable, in those cases of porcelain bridge-work where metal crowns are used as abutments or piers. Platinum crowns, constructed after this method, can be run through the furnace any number of times, without injury, since there are no joints to open.

The prosthetist who attempts to make a seamless crown must be able to carve the tooth he desires to reproduce. If unable to do this, some other method, perhaps, will enable him to secure better results. Often those who can carve a properly shaped plaster model have felt that the seamless method was unreliable, because of the difficulty met with in securing an accurate counterdie in which to swage the crown.

Porosity of the sides and bottom of the matrix is a defect most liable to occur in casting the fusible metal. This is due to the presence of moisture, or gases, in the plaster model over which the matrix is formed and which cannot escape on account of the rapid crystallization of the metal. If the fusible alloy could be kept in a molten condition a sufficient time to permit the moisture to make its escape through the metal the matrix would be perfect. This, however, is not feasible with the ordinary appliances in use.

The usual method of depriving the plaster of moisture is to heat it in the flame of a Bunsen burner, or alcohol lamp, but this is seldom successful, as there is no way of ascertaining when the model is in proper condition to receive the metal.

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*Read before the Odontographic Society, Chicago, Ill.

Another method, designed to aid the foregoing, is to drill one or two very small holes entirely through the model, extending from occlusal to gingival ends, and of punching corresponding holes through the base of mouldine on which the model rests, as an outlet for the steam formed during the pouring of the counterdie. This, however, enables only a portion of the moisture to escape and, as a consequence, the walls of the matrix will often be defective.

Still another plan is to reproduce the model in mouldine, instead of plaster, and pour the matrix over that, but the chief objection to this method is the extra time required for so much detail work, and the liability of the model becoming distorted in handling before the matrix is secured.

The following plan is now offered to you for consideration, and after a trial of almost a year I feel justified in saying that if the details are correctly carried out a perfect matrix can be secured in more than 95 per cent of cases. It is presumed that all of you are more or less familiar with the manner of constructing the plaster model of the tooth that is to be reproduced in platinum or gold, so this part of the method will receive no consideration.

The model, having been constructed and carved to proper shape, is now ready to dry out. The metal is placed in the ladle and melted, the plaster crown grasped in a pair of long handled wire pliers that close automatically and pressed into it until entirely immersed. A ladle of small diameter but quite deep is used in order that the metal may entirely cover the crown.

When first introduced, considerable bubbling occurs, owing to the rapid escape of the steam. Vibration is distinctly felt in the plier handles and also in the ladle handle, as long as any moisture remains. As soon as this ceases it is a certain indication that the plaster is dry and free from all moisture or gas that might cause trouble in casting. Three to five minutes' time is usually sufficient to bring about this condition and insure certain results.

It is now removed from the ladle and placed in position on base on which it is to rest while the matrix is being cast. If set on mouldine care should be taken that the cervical end is not pressed into the clay, as this would reduce the depth of the matrix and consequently shorten the crown.

A better method is to shape the mouldine with a curve corresponding to the gingival curve of the band from buccal to lingual and cover it over with a sheet of thin paper. A small hole can be drilled in the cervical end of the plaster crown, into which a peg is fitted, the outer end projecting an eighth of an inch or so. The crown is now pressed down on the mouldine, the peg passing through the paper and into the clay, and acting as an anchorage to hold the crown firmly to its base. If the model is not held down firmly, the metal, owing to its greater specific gravity, will displace it and it will float to the surface. The object in using the paper over the surface of the mouldine is to prevent the metal from coming in contact with it, as the glycerine, with which the clay is mixed, has more or less affinity for moisture and readily takes it up from the air, and if any is present on the surface against which the metal is poured the result will probably be a faulty matrix. By covering the mouldine and attaching the crown in the manner just described, error from this source is obviated.

The metal ring is now set over the pattern crown, and the strips of pasteboard inserted in the ring slots, the metal allowed to cool somewhat, or until it begins to thicken slightly, and is then poured upon the occlusal surface of the crown and allowed to trickle slowly over the sides until the matrix is of sufficient thickness. The metal should be poured as cool as possible and yet be sufficiently plastic to copy accurately the surface over which it is cast. When set, it is knocked out of the ring, cooled, and split apart and the pattern removed. As before stated, a perfect matrix can be secured in almost every instance, if the details have been carefully attended to.

By a slight modification, this method is applicable to the construction of counterdies for ordinary swaged cusp work.

The gold band, upon which has been carved the plaster cusps, is covered with a coating of whiting and alcohol, to protect it from contamination by the baser metal. It is immersed in the manner before described, and held under the surface until all moisture is driven off, then set into the clay about to the line of junction of the band with cusp, the ring placed in position, and the matrix poured.

A word of caution is necessary at this point. If any of the whiting, covering the band, should become displaced, the baser metal immediately unites with the gold to such an extent that a new band will frequently be required. The whiting is very easily disturbed, the slightest touch being all that is required to dislodge it, so that too much care cannot be exercised to avoid displacing it in handling the crown in the molten metal.

I have been experimenting with a varnish that would be easy to apply and more difficult to remove than the whiting, but up to the present time have nothing of special value to offer. An idea occurred to me the other day that may overcome the difficulty. This is to cover the entire band, after the cusp is carved with plaster so as to protect it perfectly from the metal.

This covering need not be more than two millimeters thick, and it will in no way interfere with the escape of the moisture contained inside the band. It may, perhaps, require a trifle longer time to prepare the model for casting, since it is somewhat more bulky, but that is the only objection to its use.

When dry, the plaster covering can be removed, the case imbedded in mouldine in the usual way and the matrix cast.

Most excellent counterdies of uniform density throughout, in which the finest lines and the sharpest cusps can be copied, may be produced after this method, if good judgment and care be exercised in the various steps.

SETTING CROWNS AND FILLING ROOT CANALS.*

By H. L. Cruttenden, D. D. S., Northfield, Minn.

Crown and bridge work have opened a new field in dentistry. They have been tried and found satisfactory. They have come to stay. With the many instruments and systems that have been introduced in their manufacture, there seems to be little that the profession can desire that has not been brought out. Yet there is one part of the system that has been overlooked. No system has, to my knowledge, been given us for the proper setting of a crown or bridge.

From the setting of a simple Logan crown to the more skilled production in form of a bridge of gold or porcelain, if the setting is not perfect the work is liable to fail to perform the function it was designed to fulfill. Bridge work is like a chain, "only as strong as its weakest part."

I propose in this paper to give a system of setting a crown or bridge that is absolute in its results, that has no guesswork or supposition that the root has been filled with the material intended for that purpose, and that no air is confined in the inner portion of the canal; at the same time one that is easier and simpler to manipulate than the ordinary way.

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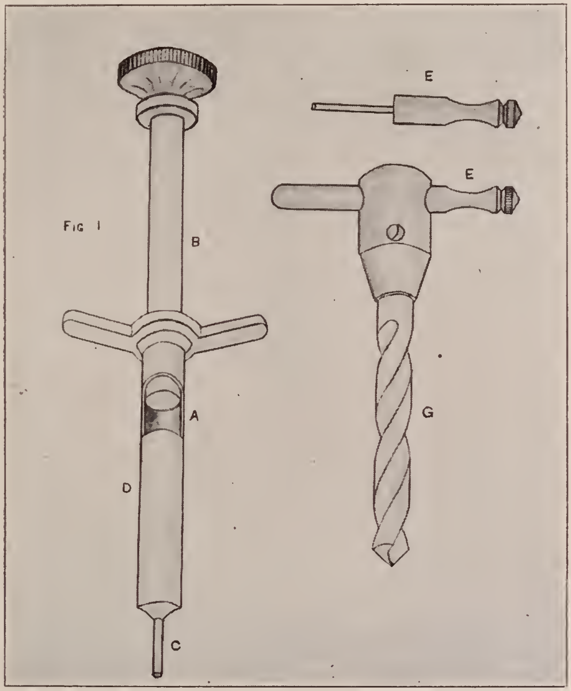
*Read before the Minnesota State Dental Society.

To do this we will use a cement syringe, which consists of a tube with a piston working easily within it (Fig. 1), and a contracted tube or point at one end small enough to enter an enlarged canal that will receive a pin; the cement is introduced into the syringe through a lateral opening near the upper end. Mix the cement to the consistency of thick cream or vaseline; if it is very quick setting, have it thinner. Insert the small end of the instrument to the bottom of the canal; press upon the piston until you can see the cement coming out of the canal; continue to do this as you draw the point out of the canal. The material is deposited at the bottom first, and the entire canal is filled. Now insert the pin of your crown or bridge into the cement and you have a perfect setting with no air confined at the end of the pin. How many times in setting a crown or bridge have we pressed it up to place only to find, after removing the pressure, it will



come a little way out of the root and we are required to keep a pressure upon it until the cement hardens enough to hold it there. Why does the crown start out? The answer is simple enough if you only give it thought. An air cushion is formed in the canal. Air no doubt is a good thing, but it does not make a very good setting for a crown. We abhor a vacancy near the apex of the root, or in the small portion of the canal; why permit one to exist in the larger portion?

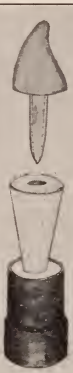


Fig. 2

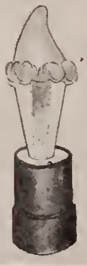


Fig. 3

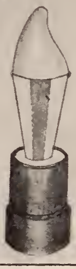


Fig. 4

We have been trying to fill the canal in the root from the wrong end—trying to fill from the top rather than from the bottom. In building an arch or pyramid we do not set the capstone first, but by beginning at the bottom and building up the process becomes simple and easy.

We have been filling roots all these years with the supposition that the cement would go up into the canal if placed upon the pin and some worked up with a small instrument. As soon as the material upon the pin closes the opening of the canal the air is confined in the root, and no portion of the cement will go into the canal for the reason that "two things cannot occupy the same space at the same time," a simple law of nature we have been overlooking. The fact is that the gum and root are not transparent and we have been working in the dark. If we do, by long and patient manipulation, succeed in getting a perfect deposit of cement into the canal, we are ignorant of it, for it is hidden from our eyes.

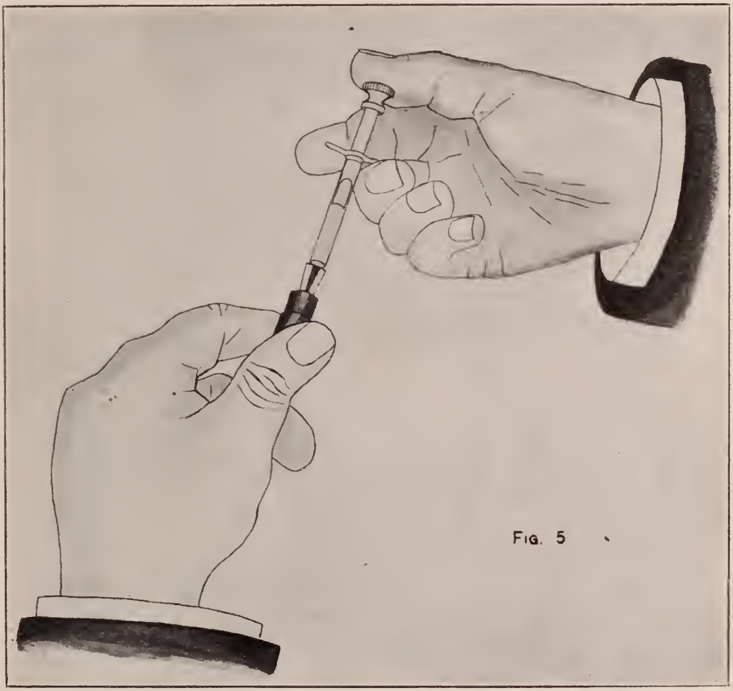


FIG. 5

Let us make a practical test to illustrate these statements: Take a glass tube (Fig. 2) formed like the root of an anterior tooth with an opening in it like the enlarged canal of a root to be crowned; the other end being sealed, and one side of the glass being opaque, so that the canal cannot be seen. Take a Logan crown with a pin that can be admitted into the tube. You can use cement if you desire, but a more convenient substitute will be a mixture consisting of vaseline, whiting and a little coloring matter to tint it with, so the results can be better shown through the glass. With this mixture set the crown as you have been in the habit of doing, keeping the opaque side of the tube towards you, so you will be working as if the root was under the gums out of sight, or cover it with the thumb and forefinger. When the crown is set turn the tube about and see the results. (Fig. 3.) As the pin went into the canal the air stripped or wiped off the material from the end of the post, and that portion is set in air instead of cement, while about the opening between the crown and the root is a large quantity of the material forced out, which, if it was in about the gums of a patient, would make him feel anything but pleasant.

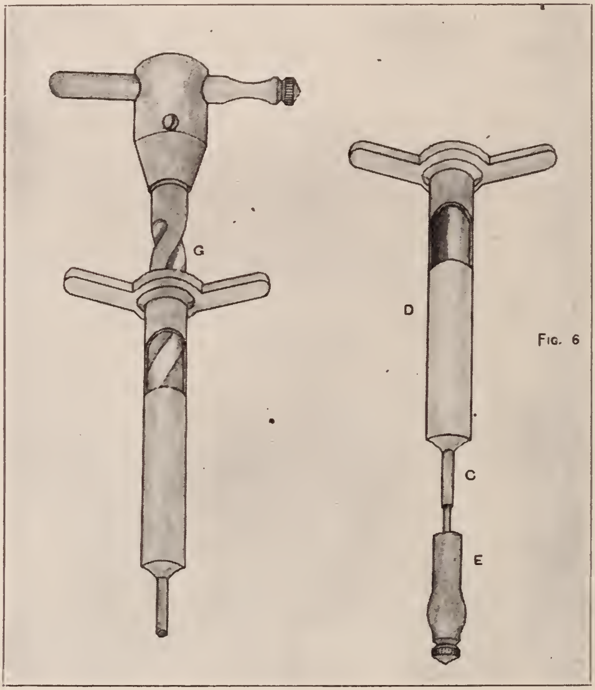


FIG. 6

Now take the same tube and crown and set it with the syringe. Have the opaque side of the tube toward you as before. Fill the syringe and introduce the pin as far in the tube as it will go (Fig. 5), and inject the material into it; continue to press on the piston as you draw it out of the canal. Reverse the tube and see the result (Fig. 4). A perfect filled canal; then insert the pin and but a little excess of the material will be about the joint between the crown and tube. With a perfect filled root the cement adhering to the pin the entire length of the canal. There is not the liability of the root splitting as there would be with a portion of it unfilled. Right here let me give you a truth. A long pinned crown with the upper portion set in air is not as good as a short pin in a perfect cement setting. But a long pin with a perfect setting is better still.

A few words upon the care of the instrument: After it has been used in a practical case in setting a crown or bridge with cement there are two things that should be attended to. First, remove the piston B (Fig. 1) out of the barrel and wipe it off. Second, insert

Fig. 8

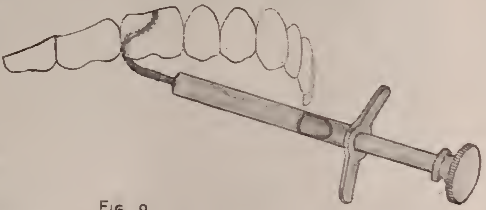
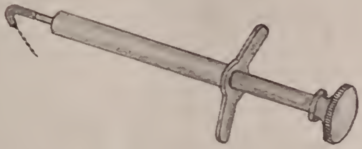


Fig. 9



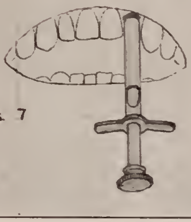


Fig. 7

the small cleaner E into the point C (Fig. 6), forcing the cement into the barrel D. This should be done before the cement sets. Drop the tube and plunger into a glass of water, and as soon as convenient clean by wetting the drill, and with it remove the cement from the tube; this is easily done, or you can leave it until the cement sets in the tube; then cut it out with the drill, it will come out as a powder. After it is cleaned see that the point C is open and the plunger works easily in the tube, and it is ready to use again. Should the parts become coated with the cement they can be easily cleaned with ammonia or muriatic acid. A small washer can be made of Cottonoid or Spunk, like the part H, with a hole in the center, and this placed over the point C; then, when the point is inserted into the root (Fig. 7), the absorbent dries the end of the root just before the cement is spread upon it. Chloro-Percha can be used in place of cement if desired; the application is the same.

PROF. HOLZMANN.

While the primary object of the syringe was to facilitate the setting of crowns, I find it largely used for other purposes. For the introduction of mummifying paste, Chloro-Percha, cement or other plastic materials into pulp chambers or canals. Also the introduction of cement into inaccessible cavities. This is done by placing a piece of small rubber tubing upon the point C (Fig. 8); this can be adjusted to any position or direction, and any cavity or pulp chamber can be reached and the material deposited where you desire it to go.

A party informed me he used the syringe with a hypodermic needle point soldered upon the point C, and this introduced into the smaller canal he filled the entire root. I have not tried this, but if any wish to use it in that way I would suggest in place of soldering on the point, let a small piece of the small rubber tubing be the connecting part between the needle and the point; it can be adjusted to any angle, and any root can be reached. (See Fig. 9.)

Further comment upon this system of setting crowns is unnecessary; the profession can see, can believe, can know when their work is done it is there to stay.

A member of the Executive Committee asked me to give a practical demonstration, actually setting one or more crowns with cement. With this in view I have a patient whom I will introduce to you as "Prof. Holzmann"; some of you met him at the Wisconsin meeting. This is a plaster cast of the Professor. A plate has been made for the upper jaw in which are six tubes. In these tubes I have inserted six roots ready to receive the six anterior crowns. They are natural roots, prepared in the usual way; the outer portion of the roots were dipped in melted wax to seal all openings in the canal and tubuli. This makes the canals air-tight, as they should be. The crowns are imitation of Logan, made of plaster of paris and German silver pins.

I will now mix the cement, fill the syringe, introduce the point into each root canal and fill them, set the crowns, after which I will clean the syringe. After the cement is set you can break or grind away the roots and see the result of the operation.

I would ask that a committee be appointed to note the manner of operation, the time it takes and the results, and report to the society.

The President appointed as such committee Drs. F. E. Moody, E. O. Sullivan and G. S. Todd.

The committee beg to report:

For the benefit of those who were not present yesterday, we will state that Dr. H. L. Cruttenden read a paper, illustrated by charts, on the workings of his cement-syringe for carrying cement into the roots and for setting crowns and bridges.

He had six superior anterior roots set in plaster on a dummy ready for the reception of Logan crowns. The specimen crowns were made of German silver wire and plaster carved to represent a Logan.

It took the Doctor: Ninety seconds to mix the cement; thirty seconds to fill the syringe; thirty seconds to carry the cement into the canals; forty-five seconds to set the crowns and clean the instruments. The operation consumed three minutes and fifteen seconds in all.

This morning the committee removed the roots and crowns. We split the roots so as to ascertain whether or not the canals were properly filled, and are pleased to report that they were filled perfectly. The committee is led to believe that the syringe is not only a saver of time, but that the work can be performed with more accuracy than by the use of fine instruments for carrying the cement. We further believe that every dentist should have one of these syringes for the perfection of the work stated above.

F. E. Moody,
E. O. Sullivan,
G. S. Todd,
Committee.

A FEW ERRORS IN DENTAL HISTORY CORRECTED.

By William H. Trueman, D. D. S., Philadelphia, Pa.

If Dr. Rederich had made himself familiar with dental literature of a date prior to eighty years ago before writing the article on page 963, Dental Review, Vol. XIV, December, 1900, I am very sure that he would have written much of it differently. While there is a vast difference between dentistry as it is now practiced and as it was practiced then, the difference is no greater than that between surgery and medicine of that date and the present.

The art of filling teeth was practiced successfully, and was an appreciated and fully recognized part of dental science in Fauchard's time. He describes the process, the materials and instruments used, and urged the value and importance of thus preserving the natural teeth in his work published at Paris, 1728, in language indicating that the art of filling teeth for the purpose of repairing the ravages of caries and arresting its progress had even then advanced far beyond the stage of "sickly attempts." In the preface to his work he refers to the skilful operations of others who had many years preceded him, regretting that they had not published their methods and made known to the world that which they had learned during their many years' experience as dental practitioners. No one at all familiar with dental literature of the eighteenth and the early part of the nineteenth century will for one moment tolerate the derogatory and untruthful remarks so frequently and so carelessly applied to the science and its practitioners of that period. Dentistry has been recognized as a science and its practitioners known as dental surgeons for two hundred years or more.

Dr. Rederich is in error regarding the first dentist to practice in the United States. Who was the first, I think, that I may truly say, is at present unknown. The credit is usually given to Robert Wooffendale (not "John.")* Concerning Wooffendale, we learn from Harris' Dictionary of Dental Science, first edition, 1849, the following: He was born in Sheffield, Yorkshire, England, 1742, where he lived until twenty years of age, when he went to London and served an apprenticeship with Messrs. White & Gipps, druggists. During this time he became acquainted with Thomas Berdmore, dentist to King George the Third. After completing his apprenticeship he placed himself under Mr. Berdmore's instruction until considered competent to practice. He arrived at New York, October 30th, 1766. From advertisements† we learn that he was in Philadelphia April, May and June, 1767. Dr. Harris informs us that he returned to England March, 1768, and commenced practice in Sheffield, his native place, but in a short time moved to Liverpool, where he remained fourteen years. On the death of his preceptor, Mr. Thomas Berdmore, about 1784, he went to London and soon obtained a large practice. About 1795, he returned to New York and resumed practice. Two years later he retired to a farm on Long Island, leaving his son John Wooffendale to take charge of his professional business He died October 3rd, 1828, in his eighty-seventh year. While in Liverpool he wrote a little book entitled "Practical Observations on the Human Teeth," published at London, 1783. It is a book of 158 pages and one page of illustrations representing supernumerary teeth, teeth with crooked roots, incisors with double roots, the effect of smallpox on the enamel and the shape of teeth, and the effects of tartar.

Regarding the use of gold for filling teeth, he has this to say: "For several years after I practiced as a dentist I used lead for this purpose (stopping teeth), but I frequently observed the lead used in stopping a tooth, either by myself or by others, to be in a corroded state in a short time after the stopping had been performed." This he attributes to the acids taken with food or as food, or to acidity of the stomach. He says, this does not always happen; he has seen teeth stopped with lead several years that to all appearance have been unaltered; "but as this may not frequently be the case, I think it safer to use gold."

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*Wooffendale, not Woffendale.

†Pennsylvania Chronicle and Advertiser, April 6 to June 22, 1767.

He further says: "There is another reason for using gold for this purpose, which, although of much less real importance than the above, yet may with some be thought sufficient to give it a preference; and that is, when a tooth is stopped with lead, it generally looks black and like a decayed tooth, allowing the lead to remain unaltered (he means, in cases where it remains unaltered) and not corroded as above mentioned; but when stopped with gold, it always looks well and of its natural color."

His little book compares very well with others of that period in the English language, of which, however, there were very few. It was intended for the people, not for the profession. Its perusal is convincing that practitioners of that day were far better equipped in methods and appliances, and were far better informed regarding the teeth and their surroundings than Dr. Rederich gives them credit for.

That gold has been used for many years for filling cavities in teeth caused by caries in order to arrest its progress and repair the damage done, is beyond question. Accessible writings published early in 1500, quote from ancient writers who lived during the tenth to the twelfth century directing that the decayed portion be removed by suitable instruments and the cavity filled with gold leaves. Fauchard (a) compares the value of gold, lead and tin for this purpose, preferring lead on account of its softness and ready adaptability. His method resembled closely the old "barley-corn" cylinder wedging process that preceded by many years the advent of cohesive gold. In expert hands it is capable of excellent results. Fauchard speaks of such fillings being in excellent condition, and having preserved the teeth for a score of years. Berdmore's work attested his skill long after he had passed to the tomb. Of several English operators before 1830 it is said that their gold fillings looked as though the gold had been melted in a crucible and poured into the cavity. Dr. Parmly, who visited England early in the thirties saw some of this work, and was amazed at its perfection.

(a) Dental Cosmos, vol. xxix, January, 1887, page 7.

Regarding the Greenwoods, Dr. Rederich is also in error. The grandfather of Isaac, Jr., came from Norwich, England, about 1650. He was a ship carpenter. If his grandson, Isaac Jr., was a dentist, he should be credited with being the first American dentist. As early as 1770 he is noticed in a newspaper, in connection with a political event, and his vocation given as an ivory turner (a). This business, it has been contended, naturally included that of dentist. Now, from whom did he learn what he knew of dentistry? His grandson, Isaac John Greenwood, D. D. S., (b) writing to Dr. J. Taft under date New York, November 14, 1860, says his grandfather was established in business at Boston, about 1750, as a mathematical instrument maker, ivory and wood turner, umbrella manufacturer and dentist. He speaks of a portrait of him painted some time after this in which he is depicted with his left hand and arm resting upon an open volume of Hunter's Treatise upon the Human Teeth. All of Isaac Greenwood, Jr.'s, sons practiced dentistry at some time and in some sort, and the grandson says that all the information they had was acquired in their father's workshop. While communications such as this are interesting, they must be accepted with a great deal of allowance. Only so far as they are supported by other sources of information have they real value.

The writer of these letters had hardly reached legal manhood when his father died, and he credits his uncle Isaac as the source of most of the information they contain. Some items are probably correct; others may be correct as mere statements, but (unintentionally no doubt) misleading; others again, as, where by the expressions used, he seems to claim for his father the invention of springs, we know to be incorrect. Springs were used, described and figured in works published long before his time.

(a) The Boston massacre of March 5, 1770. The only paper I have so far seen containing this account is "The Boston Gazette and County Journal of Monday, March 12, 1770. On the second and part of the third page it gives a full account of the massacre, the indignation meeting held shortly after, and the funeral of the four victims. The paragraph concerning Greenwood reads as follows: "Among the badly wounded was Mr. Samuel Maverick, a promising youth of 17 years of age, son of widow Maverick, and an apprentice to Mr. Greenwood, ivory turner, mortally wounded. A ball went through his belly and was cut out of his back. He died the next morning." It will be noted that Mr. Greenwood's first name is not given, and nothing is said about his being a dentist.

(b) Dental Register of the West, vol. xv, Jan., 1861, page 29.

John Greenwood began active business life as an apprentice to his uncle, a cabinet maker. He ran away before his term of apprenticeship had expired, to enter the Revolutionary army as a musician, and after many vicissitudes on land and sea, shortly after the return of peace, reached New York penniless, and for some reason was refused assistance by those members of his family residing there. Some of his former associates who had recognized his mechanical skill and ingenuity furnished the means of starting him in business as a dealer and maker of nautical instruments. The venture proved successful. A trifling incident turned his attention to dentistry and led to a change of vocation.

If Isaac Greenwood, his father, was a dentist, the honor of being the first native-born dentist should belong to him rather than to the son, as they were both born in Boston. If Isaac Greenwood, Jr., was a dentist, from whom did he acquire the art? So far, this is an unanswered question. We have only the suggestion that the art may have been brought by some of the company of physicians, apothecary and surgeons sent from London to the Plymouth colony in 1636.* It is related that when the remains of Dr. Joseph Warren were disinterred on the field of Bunker Hill, they were positively identified by the artificial teeth he wore. Who was his dentist?

Undoubtedly, dental science came to this country with Joseph Lemaire and James Gardette. They were both educated dentists, and men of more than ordinary ability. Not only did they bring the latest and the best in theory and practice from the land where the science had reached its highest development, but they also brought the liberal spirit which had always prevailed among its practitioners in France, their native land. The first to profit by their instruction was Josiah Flagg, a young officer of the Revolutionary army, who made their acquaintance while the French and American armies were encamped side by side near Providence R. I., during the winter of 1781-82. He was an apt student. He entered upon the study of dentistry with the purpose of making it his sole life work, and to him, beyond question, belongs the honor of being the first native-born American dentist. Except the intervals spent in the service of his country on entering manhood and near the close of his life, he knew no other calling but that of dentistry.

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*Dental Cosmos, vol. xxxviii, September, 1896, page 716. Also, Memorial History of Boston, Justin Windsor, 1881, vol. I, page 502.

Josiah Flagg placed himself under Joseph Lemaire's instruction until competent to practice. he then commenced practice and continued to practice dentistry until he entered the naval service early in the War of 1812. He was taken prisoner on his first cruise. carried to England as a prisoner of war and paroled in London. Here he not only practiced dentistry with much success. but improved the opportunity afforded by the excellent medical schools of increasing his general knowledge and mastering the details of means and methods of instruction there in vogue. He became intimate with the noted practitioners and medical teachers of London, and attended and assisted in their clinics.

As soon as peace was concluded he at once returned to the United States. He suffered shipwreck in New York harbor within a few hours of his expected landing. and as a result of the hardship and exposure from this sad mishap reached his home in Boston broken in health.

His recovery proving slow. he visited Charleston, South Carolina, hoping to be benefited by the warmer climate. Within a few days after arrival he was taken with yellow fever, and died September 30, 1816, aged 53 years.

His portrait shows him to have been a tall, finely formed man of commanding presence. This, with his genial disposition, his courteousness and his refined humor, made him attractive and acceptable wherever his lot was cast.

Whoever may have practiced dentistry in the United States before the arrival of Joseph Lemaire and James Gardette, the impress they made left no mark. The coming of these two educated gentlemen, on the contrary, proved the beginning of a marvelous advance. The growth was slow, to be sure; but it was healthy.

Dr. Rederich is in error regarding the Pennsylvania College of Dental Surgery. The Philadelphia College of Dental Surgery was chartered in 1850; it was not opened, however. until October 29. 1852. It completed four sessions and then ceased to exist, the faculty resigning in a body and organizing the Pennsylvania College of Dental Surgery in 1856.

He is also in error when crediting Dr. Chapin A. Harris with the invention of the suction or air chamber plate. The atmospheric pressure principle should be credited to James Gardette, who made known the discovery about 1800. Dr. Harris, speaking of atmospheric pressure retention of upper plates, page 327, "The Dental Art: A Practical Treatise on Dental Surgery," published at Baltimore, 1839, makes no claim to the invention, but says, "The application of artificial teeth, on this principle, has been practiced a long time." He calls attention to the advantage of swaged-up gold plates, on account of their fitting the palate better than a plate carved from bone, and refers, in this connection, to Koecker's work on artificial teeth.

The swaged chamber was patented by Levi Gilbert, of New Haven, Conn., February 15, 1848; the soldered chamber by John A. Cleaveland, of Charleston, S. C., June 25, 1850.(a)

I think that he is in error in crediting the invention of platinum pins in porcelain teeth to an American dentist. It is generally conceded that the manufacture of porcelain teeth was introduced by Mr. A. A. Plantou, about 1817. I have some teeth, given to me by an intimate friend of his son, said to have been brought over from France by him, and they have platinum pins. I presume the American dentist to be Charles Wilson Peale, a universal genius, who, when Mr. Plantou failed to make for him a satisfactory set of teeth, succeeded in making one for himself; he was not, however, a dentist. The credit of first using platinum pins in artificial porcelain teeth has, now and again, been given to Mr. Peale. Now, it is known that Mr. Peale's attention was first drawn to this subject by his intercourse with Mr. A. A. Plantou. Mr. Plantou came to this country in 1817. It is a matter of record that the priority of the use of platinum pins in porcelain teeth was in dispute in Paris as early as 1808. That settles it, I think, so far as any American dentist is concerned.

Cast gold plates have been invented many times. My friend Dr. Samuel Walton tried it successfully some time during the '40s, so far as casting the plate was concerned. He found, as others before and since have found, that the process had no practical value, a sufficient reason for its having no place in our text books.

(a) I challenge proof that Dr. Harris ever claimed to be the inventor of either the atmospheric pressure principle of retaining plates, or the suction or air chamber plate. In the first edition of his dictionary, 1849, page 501, he says that he suggested it in 1835, but the air chamber which he designed being regarded somewhat objectionable, he did not use it. In the second edition, that of 1855, this is omitted. In his Principles and Practice, second edition, 1845, no mention is made of the air chamber, and the plate figured is without one. In the fourth edition, 1850, page 733, he again states that he suggested it in 1835. He gives no intimation that he actually tried it, and seems not to have been impressed with its value until he saw in the early part of 1848 a cavity plate contrived by Dr. J. A. Cleaveland.

I take issue with Dr. Rederich when he says that "about 1850 no dental society worthy of the name existed in the United States." The American Society of Dental Surgeons, the first dental society in the world, the society which fostered the dental educational system that first fully met a dental student's needs, the society which published the first dental periodical, and made the first systematic effort to provide the profession with needful literature, was certainly a dental society well worthy of the name. The Mississippi Valley Dental Society was organized about 1844, and for fifty years continued in existence. The Pennsylvania Association of Dental Surgeons, organized December 16, 1845, has recently held its fifty-fifth annual meeting. Both of these dental societies, especially during their earlier years, did yeoman service in advancing professional interests. Members of the profession who speak slightingly of these early efforts have failed to appreciate how much they owe to these early dental societies, and to others which lasted but a few years. They amounted to a great deal; they broke the ice, they paved the way, they made possible the position the profession now holds on the threshold of the twentieth century. All honor to the men and the means which brought it about.

It is much to be regretted that the dental historian is hampered at every turn by carelessly-written articles such as this in review. A little research by their writers would show whether their statements were facts or fictions. Anyone unwilling or unable to make such needful effort has no business to write upon history at all.

The dental profession has a literature dating from 1563 of which it has every reason to be proud. It has all along kept fully abreast of the times. It is much to be regretted that the lack of dental libraries has kept it so inaccessible.

It is high time the absurd rot that the dental profession has been evolved from the quackery of blacksmiths and barbers was dropped. It is not true. Our professional ancestors were professional gentlemen; we have no reason to be ashamed of them. We have reason to be ashamed, however, that we know so little of them and of their work and worth.

PROCEEDINGS OF SOCIETIES.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

Regular meeting November 19, 1900, the President, Dr. T. L. Gilmer, in the chair.

Dr. A. H. Peck contributed a paper. Subject: "Some Troubles of the Soft Tissues of the Mouth."

DISCUSSION.

DR. GEO. W. COOK: Dr. Peck gave me his paper Saturday and told me there wasn't anything in it. I had very little time to jot down what he didn't have in there, and made some notes. The first thing I observed was what I think was simply an error on the part of the essayist in speaking of specific and local diseases. I think we will recognize that a specific disease may be a local one also.

In regard to the canker sores that are found in the mouth: They are a very slight trouble, I think, and can be said, I believe, solely to be a local condition. There isn't any question but what constitutional conditions are apt to be present in order that we may have them, but evidently a local condition. In regard to mercurial stomatitis: It is perhaps not a disease that would come to the dentist as a condition other than it might be present, and I think that the treatment can be summed up perhaps very simply—simply removing all irritating substances and discontinuing the use of mercury—and I don't believe there is any better mouth wash than the chlorate of potash, the old remedy which has stood by the profession for half a century or more. The last named disease that the essayist spoke of —leucoplakia—is perhaps not a very common thing. If I had known that I was going to be on for the discussion of this paper I could have shown some interesting slides that I made a few years ago in the course of the disease that came into the hands of a medical friend of mine, which finally did develop in carcinoma, and I got some slides before there were any carcinomatous cells present, and after the operation for carcinoma I got some slides from that. It is not an easy matter, as the essayist has said, to differentiate in the diagnosis of that and syphilis. I don't believe there is any one who will be able to differentiate between the two conditions; nothing short of constitutional treatment will be able to give one a diagnosis in regard to the disease. The general appearance of it, its development in the mucous membrane to that of carcinoma, if we made a microscopic examination, would give one a fair idea of it, but it is not always convenient to take a portion of the mucous membrane and examine it under a microscope. The treatment that the essayist had laid down for this disease seems rather a mild one. I think that if one recognized the local condition and it did not yield to the ordinary simple treatment at once, the thing to do would be to instigate a more heroic treatment. It has been recommended by Siegler to use strong cautery or escharotics, such as chromic acid and nitrate of silver, 50 per cent solution, touching the parts every few days, and also lactic acid. I have had occasion in one instance to treat a case and I treated it with nothing else but lactic acid; it was first thought to be syphilis. As I said, it is difficult to determine any difference between that and syphilis. As the essayist has stated, it isn't an easy matter to determine syphilitic patches, and syphilis may be present and give a good deal of trouble without the syphilitic patches. And as to the time of inoculation from the mouth—that is hard to determine. I have in mind an incident that happened a few years ago. Two fellows got into a fight and one bit the other's finger. The one who did the biting had just a few days before developed a chancrous growth and there was no syphilitic appearance whatever in the mouth, but the man who was bitten had a well-developed case of syphilis. So it is easy for inoculation, even though there is no syphilitic appearance in the mouth. There are a number of diseases that appear sometimes in the mucous membrane of the mouth that are frequently hard to determine as to their cause. Some of the conditions of the skin will appear in the mouth—measles, and one of the most common forms is scleroderma, solely a skin disease. It perhaps is out of the sight of the dentist; it may only appear on the skin or the surface of the body somewhere, and then appear on the mucous membrane of the mouth. And I might state that it isn't an easy matter to determine the difference between that and some other conditions of the mucous membrane. Siegler has described an infection of the mucous membrane that resembles very much that of the ordinary canker sore mouth that is sometimes very obstinate, and is believed by a few investigators on the subject to be solely a local infection; a bacillus has been found in connection with it resembling very much the bacillus of Friedlander. A couple of years ago I got hold of a case and studied the bacillus found in connection with the disease, but I was unable to determine anything definite about it, and I think that has been the experience of most men who have studied the subject. However, it is very easy to be in that and the canker sores in the mouth. The appearance of these places and some of their general characteristics are very much like that of an ordinary canker sore. They usually are more deeply imbedded in the mucosa and there is perhaps a little more thickening of the epithelial cells. The paper treats in a general way of the lesions of the mucous membrane of a few of these conditions, and, as the author has stated, I believe that it is not an easy matter to recognize all of these conditions and treat them; unless one is more or less familiar with all the conditions one is very liable to mistake even a canker sore for something of more importance. I think that in most cases, in all cases, perhaps, of the ordinary canker sore that they will get well themselves if let alone. The treatment of any lesion of that character, other than that of syphilis or leucoplakia, the simplest way is some mild astringent, something that has a more stimulating effect upon the cells involved. The disease that I spoke of a while ago that looked so very much like simple canker sores in the mouth is one I think that the dental profession, at least, should study more than it has been studied by them. It is more common than is supposed, and it is more of an aggravating condition than is first thought. However, the patient suffers more or less from the sore and the tongue is frequently involved in the condition, especially the muscles of the lower part of the tongue. I had my attention called to this five or six years ago in a dermatological clinic where it was brought out very forcibly before my mind that it is more common than we think of. However, there has been very little work done on the pathology of it in this country, but it is not an uncommon thing to find this thickening of the mucous membrane, and the contraction, apparently, of the gum tissue. In one of these cases that I saw I immediately diagnosed it as simple pyorrhea alveolaris, because the conditions of the gum looked very much like it; there was a contraction of the tissue away from the necks of the teeth, leaving the pocket stand open more than it does ordinarily in pyorrhea, but it is rather an aggravating condition and one sometimes might easily mistake it for pyorrhea, but by searching a little farther into the mucous membrane it would be easy to see that there was more tissue involved away from the teeth and it would be something else rather than the common pyorrhea.

Dr. B. M. Ford: There was one thing that may be so old that it has been discarded; it was not mentioned in the case of canker sore mouth. Very often patients come with the mouth so sore that they do not even want the rubber adjusted, and to relieve that difficulty I have often found a great deal of benefit with cauterizing that sore with 95 per cent carbolic acid and then covering the canker with pulverized tannic acid. I don't know that it is anything new, possibly it is very old, but it was not mentioned, and I think it can be used with a great deal of benefit.

Dr. J. E. Nyman: There were a couple of points that impressed themselves on me, and one was in speaking of the various possible causes of canker sore mouths. Now I have a patient who can produce canker sores just as certainly as night follows day by eating a quantity of nuts; I have another one who can do the same thing by eating a quantity of candy; I can produce them in my own mouth, and at the same time produce a very pronounced case of pharyngitis by drinking a few glasses of beer. I speak of these simply from a scientific standpoint, as I think they demonstrate that these conditions may arise from systemic causes in a larger number of cases than we have any idea.

There was another thing that occurred to me. It seems to me that very, very few of us have any idea of the importance of safeguarding against the transmission of syphilis. I think that disease can be called the scourge of mankind more aptly than any other. It isn't only the discomfort a man goes through at the immediate time from the acute conditions, but it is the evidences that may crop out in later years;—in total blindness without any cure for it; in total deafness without any cure for it; in paralysis of the vocal cords; in atrophy of some of the cartilaginous tissues of the body; in locomotor ataxia, the chronic syphilitic rheumatism that may come on years after, in the development of small tumors of the blood vessels of the head that may produce instant death from apoplexy, and not only that, but the cursed blight that may fill up the minds and bodies of innocent children. Those are things that may occur years after the acquisition of the disease. If any of you doubt me or think I exaggerate just simply go and talk with some eye and ear specialist, and you will be astounded at the number of cases of deafness and blindness that are due to this disease that don't crop out until later years. It seems to me that it would be logical and would be a blessing to mankind if it were made a crime for a man who knew he was suffering from syphilis to conceal it from a professional man. It has been my habit for some little time, whenever I think a patient is suffering from syphilis and I do not feel that I am competent to give a decided opinion upon it, to tell that patient that he must present me with a written statement from some reputable physician that he is not suffering from the disease before I will do any work for him, and nine times out of ten a man who is suffering from it will become intensely indignant and demand apologies. But you may answer him by saying: "See here, would you like to have me infect you with syphilis because I was careless with the patient preceding you?" And so I think it would be well to adopt just those measures. We find a case that we suspect is syphilis and are not sure of it; tell that man frankly that he has got something that looks like syphilis and that for the protection of yourself and the rest of your patients you must have a certificate from a physician before you do any work for him. Of course this would not be necessary were one thoroughly experienced in the diagnosis of it and able to recognize it amid any circumstances, but very few of us are competent to do so. Use all precaution, because unless you have been thrown in contact with it you cannot appreciate the awful results that follow in the wake of this disease.

Dr. A. W. Harlan: The remarks of the last speaker brought me to my feet. The part of Dr. Peck's paper relating to the local treatment of syphilitic manifestations of the mouth, etc., was very interesting. I might say that men are not the only persons who suffer from syphilis; a good many women have syphilitic lesions in the mouth. I don't take the position exactly that Dr. Nyman does that I have to have a certificate from a physician with reference to this, because the mouth lesions of syphilis are most pronounced and prominent and positive and more easily diagnosed in the secondary stage, when it is most easy to transmit syphilis, than at almost any other time, except when the dreadful tertiary and gummatous forms are shown. The syphilitic man or the syphilitic woman, after the forty-fifth or fiftieth or fifty-fifth day usually has some enlargement about his throat or the glands under his chin or jaw or on the back of his neck in such a shape as to imply a case of syphilis, and whether it is a man or a woman you can determine it without offending the delicacy of that individual. I don't have any hesitancy when I find what appears to be a syphilitic sore of the mouth to go about it in my own way to discover, if possible, any of the concomitant phenomena of syphilis. You don't have to come in contact with more than three or four cases of pronounced syphilitic sore mouth to be very modest about the matter, because it is simply your duty to yourself and to your other patients and to the public at large to meet this case as any other doctor would. It doesn't do any good to swab the mouth with any kind of lotion unless the patient is taking the particular form of medication that is necessary to keep syphilis under control at that time. Of course, they will alleviate, they will ameliorate to a certain degree, as Dr. Peck has said and as Dr. Cook has said and as Dr. Nyman would undoubtedly have said if he had been talking on that subject. Whenever I have a suspicious looking sore in the mouth, whether it is leucoplakia or any other form of disease of the mucous membrane not an ordinary stomatitis, I should say to that patient: there is something (if there were no manifestations that I could discover myself,) that will perhaps make it necessary for you to have some medical treatment that I am not prepared to give you. And if it is leucoplakia, the administration of, or the inunction or the hypodermic injection of some form of mercury will cause it to disappear. Dr. Peck in the paper said that it was not often that people acquired leucoplakia before twenty years of age and seldom after sixty, and that it was very seldom seen in women. Now you will see, if you apply the elements of pure logic to that statement, that the idea of pathologists that leucoplakia is some form of syphilis is not bourne out by that narrative of its external visible existence, because people do acquire syphilis before twenty years of age, and if leucoplakia is in any way the result of syphilitic lesions then it must appear before the twentieth year. If a man acquires syphilis after sixty years of age he will have all the symptoms in the mouth exactly the same as though he were nineteen or thirty-two or forty-five, if it doesn't kill him before you have had a chance to observe them. It has been my fortune at different times to go through the venereal hospitals of this country and of Europe and to have many private cases, and I must say that the ordinary means used by the dentist of the present day in sterilizing his instruments, etc., I think precludes the possibility of its being transmitted to anyone. The particular form of instruments in the shape of scalers and excavators, spoons or otherwise, that might be used when the mouth was suffering from the secondary lesion of syphilis, would be the ones whereby it might be transmitted to an innocent individual; or a pair of forceps that were used on a third molar. Of course, there are many ways of acquiring syphilis, but you can't acquire syphilis unless you break the mucous membrane and have the poison in contact with the individual in such a way that the infection will be at that point. The prick of a needle that has been in the syphilitic virus will in all probability give the other individual syphilis, but the mere contact with the unbroken surface, if it is washed off, will not ordinarily produce syphilis. I have studied the works of the very best syphilologists in this country and read them with a great deal of attention, and it was my business at one period in my life to deliver a course of lectures on syphilis to a medical class, (taking the place of the regular practitioner,) and it is one of the most interesting studies that I have ever undertaken, we had numerous cases to exhibit to the class, and I must say that syphilis is one of the most innocent diseases, in a way, that we have. It isn't half so terrible a scourge to humanity as tuberculosis. But it is an absolutely filthy, disgusting, loathsome disease and I wouldn't advise any man to acquire syphilis for the mere pleasure of showing what its various lesions might be, because all of the train of diseases that Dr. Nyman has spoken of may follow. But as Keyes has said in his great work, it is a disease that has the greatest surprises for the practitioner. He further says in his classic work that there are men and women who acquire syphilis, go through all of the various stages of it and recover spontaneously. Dr. Dennis, who is sitting in the room, if he has ever read Keyes' work, will bear me out in that. And he is one of the men who has had the largest experience of any man in this country. On the other hand, I have seen a man in the city of Chicago die of malignant syphilis in less than six weeks. One of the noted physicians of this city acquired syphilis on his forefinger and in less than six weeks he died, so it has its surprises. The trouble about the transmission of syphilis is that most of the people who ought to know better are so afraid of it that they stand off and say to themselves that even the breath of the person must be infectious and so don't do what ought to be done. And there are lots of physicians who don't know how to treat it. I am not speaking now of the more enlightened medical men of this city and of other cities, but I mean to say that there are a great number of practitioners who haven't the slightest conception of the therapy of syphilis. Any of you gentlemen who come in contact with a syphilitic case at the time when it is most dangerous will find it between the fiftieth day and about the four hundredth day. And it is a question whether you can inoculate any person with syphilis from the tertiary secretion. I know syphilologists say that it is liable to be transmitted, but I say it is a question whether it is so. I have repeatedly irrigated and injected and washed out and cut away syphilitic bone, where it invaded the antrum, and all that, and I am sure that I have never inoculated any person for the simple reason that all of the instruments were absolutely sterilized afterwards. You all know what sterilization means. It means first that the instruments should be cleaned and then they should be submitted to something that will absolutely destroy the virus, and that is heat.

Dr. C. T. Gramm: I think that dentists should differentiate more sharply between the classes of phenomena exhibited in the mouth. Between those that are purely local in character, due to trauma, local irritation, etc., and those most frequent exhibitions which are simply manifestations of general systemic lesions. These latter manifestations may be either premonitory symptoms of impending general disorders, be concomitant with them, or may appear at the finale of the chapter of disease. I have long held that certain persistent irritated conditions of the mucous cells about the neck, or teeth are indicative of a disturbed metabolism which must sooner or later assert itself. It is a bad theory and worse practice to limit one's conception of physical infirmity to "local" points because one may be a specialist.

That man who would treat leucoplakia upon the buccal membrane with local applications might with the same brilliant success treat syphilitic sores of the mouth with—let us say, for instance, tar ointment.

The essayist stated, if I heard aright, that mercury caused irritation of the gum by exuding through the gum. It is my impression that it is a fact accepted long ago that hydrargyrism is synonymous with *lowered vitality,* which means also vascular disturbance; that mercury simply prepared the cell elements for a riotous invasion of microbic life.

Dr. G. J. Dennis: I came more to learn this evening than to speak of anything that I knew of the subject. The paper has interested me greatly, particularly in regard to the subject of syphilis, and in regard to the subject of leucoplakia which to me has been presented in a very clear and very distinct light. In regard to syphilis, I would say that the syphilitic manifestations in the mouth are not always easy to diagnose. They are of such a varied nature. In ordinary forms of ulceration in which there is the usual indurated base occurring in the throat or on the soft palate, it is not difficult to diagnose; anyone who has once seen the disease will recognize it again. But there are certain cases in which it is difficult to recognize, especially where there is a necrosis of the bone. One case I have in mind which came to me after going to another dentist: Two teeth had been separated, a lateral and a central, with a separator. Between those there was a necrosis of the alveolar process passing down between the two teeth; there was a sloughing of the soft tissues; the teeth were somewhat loosened; there was an exudation of pus; apparently a simple necrosis resulting from the separation of the teeth and I treated it as such for a time; there were no other manifestations of syphilis apparent to me at that time. I could discover no enlarged glands. There were no other manifestations of syphilis present. The disease occurred in a young woman, showing that you don't run against syphilis alone in men. It was a condition in which I felt sensitive in regard to inquiring as to whether there was syphilis or not. She came to me simply for the treatment of a local condition. I found there simply the necrosis of the bone between the two teeth and treated it simply as a local condition. On the following day she returned to me. I removed the necrosed bone and expected it to heal up very nicely. The next day she returned to me with the inflammatory process extending to the next septum; teeth becoming loosened; inflammation of the soft parts greater. I still supposed that I had a local lesion to deal with. I treated it again by removing as much as I could of the necrotic tissue and by stimulating preparations. She returned the third day and the third septum was affected and the teeth were loosened. I sent her then to a physician who inquired into the history of the case very closely. He arrived at the conclusion that it was a case of secondary syphilis. It was treated as such and the patient recovered; the teeth tightened and she ultimately recovered.

Another case that I had recently is that of tertiary syphilis in which there was paralysis of the facial muscles, paralysis of one side of the tongue, and a case, when the history was brought out, of thirty years' standing. In this case the gentleman was the father of two healthy young women of twenty years of age; apparently no syphilitic manifestations in his wife or in the young ladies. You never know when you are up against syphilis. Of course, the danger of infection in the tertiary stage is not great. Often the manifestations of syphilis are not present in the mouth, they are present only in the skin. The dentist may meet with this, may work upon such patients when these manifestations only show themselves in distant parts of the body. The question is, how is the dentist going to guard himself altogether against the transmission of syphilis unless he is exceedingly careful in the sterilization of his instruments?

Another interesting case which I have had lately is a case in which there was a peculiar condition of the tongue. The case is one of neurasthenia. It has been treated with iron tonics. The tongue was red and inflamed; it looked as raw as a piece of beefsteak; the papillae somewhat elevated; no coating on the tongue whatever, and yet, that tongue was so extremely sensitive that scarcely anything could be put in the mouth. It was interesting to me for this reason, that in looking to see if there was any particular cause for it I discovered that one German writer said that iron in such cases was entirely contraindicated. Since then the iron has been stopped; the simple solution of hydrastis was prescribed; the tongue became better.

There is another condition that is occasionally found, rather rarely in old people, more common in children, and that is the inflammation, or rather the deposit upon the tongue, often upon the palate, hard and soft, sometimes upon the cheek of fungus of oidium albicans. In children the disease is called thrush. I read a paper upon that subject some twelve or fourteen years ago before one of the state Associations which Dr. Harlan kindly discussed at that time. The case that I saw at that time was unusual, it was the result of heavy smoking; the smoking was stopped and ultimately the mucous membrane of the mouth returned to its normal condition.

There are other diseases of the mouth, such as ptyalism, which may be brought on by the administration, of course, of mercury, which has been mentioned, and the iodide of potassium which causes an intense flow of saliva. Occasionally, on the other hand, there is an unusual, almost a pathological condition, in which the saliva seems to have disappeared entirely, no secretion whatever. Then there is the simple glossitis in which the tongue swells from an irritation of some kind or from some infection. Then again, there is another condition which I believe the essayist has not mentioned, and that is the Angina of Ludwig. It occasionally occurs, beginning on one side of the mouth, the tongue swells, there is an edematous condition which extends down into the submaxillary glands, often ending with edema in the glottis, and often the patient dies from suffocation.

Dr. G. T. Banzet: I would like to mention a case of leucoplakia

I had about two years ago. It occurred just above the superior right cuspid, labial surface. It first appeared as a nodule about the size of a pin head and somewhat transparent, later becoming almost pearly white. I treated it with various remedies for possibly two weeks, but did not get any results whatever. Then I used carbolic acid and in the course of a week it had healed up, remaining healed permanently, or apparently so, for two or three months, when it recurred. I gave it the same treatment and found this time that it had denuded the alveolus. I went in there thoroughly with the acid and since then there has been no recurrence.

DR. A. H. PECK (closing discussion): I have only a word. In regard to the expression used in the beginning of the paper which Dr. Cook spoke of, I will state that it was purely an oversight which will be corrected. Unless a misconception may be carried away by some I will also state that it was not my object or intention to deal with all troubles which are found in the mouth; to do that two or three papers of proper length might well be written. I am much pleased with the interest shown and the discussion the paper has received. As the President has stated, the hour is now late and I gladly yield the time to the next essayist.

Dr. J. H. Prothero read a paper entitled, "Constructing the Matrix for a Seamless Crown."

DISCUSSION.

DR. H. J. GOSLEE: In opening the discussion on the paper presented by Dr. Prothero I feel a little hesitancy, because, like himself, I am not overly enthusiastic upon the subject of seamless crown work. Hence, will confine the brief discussion that I shall indulge in more to a consideration of the principles involved than of the detail itself. I believe that the method of detail outlined by Dr. Prothero is a very good one, and that by following it closely one may be able to secure the die for seamless crown work in a very successful manner, in a large percentage of cases. I have never been at all enthusiastic on seamless crown work because I have never been able to ascertain wherein it has a distinct advantage over the sectional crown. The objection to the seamless crown, in my opinion, is that it is not possible for one to stretch gold or platinum to the extent that is necessary without weakening it very materially in the very places where it should require the most strength. Gold and platinum are very susceptible to stretching, elastic, if you please, and in con-forming them to this shape one naturally stretches the metal considerably. And not only does the stretching occur at the point which represents the summits of the cusp, but throughout the entire band of the crown, so that that portion which should fit closely to the tooth and be strong, is weakened because of this stretching, and does not possess the strength that a piece of gold of a given thickness will possess, such as we would have in a band that we can make of a certain gauge and still be the same gauge after being fitted accurately. As regards the possibility of securing more artistic results, I cannot see where that comes in, because the contouring must be done just the same. You can do the contouring of a gold band just as easily as you can contour a plaster tooth to conform to the symmetrical alignment of the adjacent teeth, restore approximal contact and reproduce the shape of the tooth for which it is intended. It requires even more artistic ability to carve a plaster tooth of the entire length than it does to contour a band. And while it may be contended by some that it is impossible to get the same beautiful bell shape to a band and cusp crown that it is to a seamless crown, it is erroneous, for the reason that if we desire a bell shaped crown and if the conditions call for it, all we have to do is to make the occlusal dimensions of the edge of the band a little greater than the cervical dimensions, and in the contouring of that occlusal edge we can get the same bell shape that we would by swaging the whole thing in the manner that it is in a seamless crown. As regards the point referred to by the essayist in platinum telescope crown work for porcelain bridges, it may possibly be an advantage there because unless platinum solders are used the seams may come open in the furnace in the baking of the porcelain. But this will not happen if platinum solders are used, nor will it happen if a perfect contact between the edge of the band and the edge of the cusp is secured, because if there is perfect contact between two surfaces of platinum and they are soldered with pure gold, when they are placed in the furnace and that pure gold fused, it becomes alloyed with the platinum, and you have a perfect union there that will not come open.

I do not regard the subject of seamless crown work as anything more or less than a fad, and if anyone can convince me of a single point of advantage over the sectional crown I shall be pleased to discuss it. In my laboratory this evening I found a crown that I had finished to-day for a practical case that I want to show, simply to illustrate the fact that contouring and artistic results, with greater strength, can be obtained by the ordinary method without going to the extra and additional trouble of making seamless crowns. The whole thing in getting an artistic result after the band is contoured is to have the cusp fit and approximate the edge of the band. That can only be secured by making the cusp to fit the band as well as the occlusion, and if that is done the joint where the band and cusp approximate is invisible, and if it is filled with a high karat solder the result is just as artistic as if it were swaged out of one piece of metal, and the band throughout its entire area is thick and heavy so that it possesses sufficient strength to resist the stress imposed upon it.

Dr. W. H. Taggart: This is a subject that I am not especially interested in at the present time, and I think it is almost a mistake to have brought it up, and advocate it as Dr. Prothero's method, not but what it is Dr. Prothero's method, but I think it will revert later to his discredit, for the reason that some one will get it into his head that Dr. Prothero said that a seamless crown was the proper thing. It is hard enough to make the fit of the band to the root of the tooth if you can control all of the conditions, see inside of it, and how in the world you are going to make the same kind of a fit under other conditions I can't see. So, for that reason I think the subject of seamless crowns ought not to be brought up because the younger men may think it is an easy method to do that operation when another method would be much better. Dr. Prothero spoke of some material to keep his metal from sticking to the band. If he will use gum arabic water with the whiting there will be no danger of it being rubbed off readily. But even that I hate to mention for fear some-one may think it was one way to get over the difficulty.

Dr. J. E. Nyman: I would just like to say that I would condemn a seamless crown in the very place, most of all, where Dr. Prothero advises to use it, and that is for the abutment of a porcelain bridge, for this reason,—that that is a place where a crown has to stand anywhere from two to four times the stress that an ordinary crown has to stand, and I have had two cases in my practice where a section has been torn right out of the mesial side of a seamless crown that was used for an abutment on a second molar to hold a four tooth bridge, because the stretching had so thinned it at that point. So that it has been my policy in making metal crowns for that purpose to telescope an additional band onto the first one. And so for that reason, although with all due respect to Dr. Prothero, I want to condemn a seamless crown in the very place the doctor advocates its use. Another thing,—I don't know why people are advocating seamless crowns anyhow, unless they are trying to make a cheap crown and their time is of no value, because I will wager that I will make the ordinary sectional crown,—and I will have judgment passed on it by any dentist—in less time than any man will make a seamless crown, and make one that will be all that a crown ought to be. The doctor said that he has measured some crowns that he has swaged in this way and he finds them to be of the same gauge that the plate was that he swaged the crown of. I can't conceive how it is possible to stretch a piece of 29 gauge gold or swage it into a matrix of greater area and have it still 29 gauge. And there is another thing, and it is especially true in abutment crowns,—every shell crown that is put on ought to have solid cusps. I don't care how expert a man is at taking the bite or at judging the occlusion, you will time and again come across things that you never dreamed of and you will find that you have got to cut a great furrow in some beautiful cusp you have built up in order that the patient may masticate in comfort; if you had the ordinaray shell cusp crown you would ruin the whole thing. It takes greater skill to make a seamless crown that is all that a crown ought to be than it does to make the sectional crown, and it takes more time even though it does take a little less material. In regard to pouring fusible metal on or into plaster, if you will examine any plaster surface you will find that it is full of little pores. Now if you will just dust that plaster over with soapstone so as to fill these pores you can get the most beautiful cast from that every time; if you will do the same with mouldine you will get as fine dies or counterdies from that in fusible metal as one may desire.

Dr. H. C. Waack: I feel that something ought to be said in favor of seamless crowns. Now we have to admit that it has its disadvantages, and I think it requires a great deal more skill than it does to make an ordinary crown. I found that out when I first tried to make them. But I would like to mention one advantage particularly, and that is that we can get a contour that we cannot get in the ordinary way. One of the best results to be obtained by the seamless method is in making a bicuspid with a porcelain facing, and I think it would be much better if we would all use it instead of displaying so much gold. I first fit a copper band over the root, cut out the buccal as well as the palatine surface, then take a modeling compound bite, run up a model, fit in a porcelain facing, fill in with plaster in the back and carve up in the usual manner. I take the point of a pen knife and draw a sharp line around the edge of my facing. That will give me an outline which is reproduced in the gold. Then instead of dipping the carved plaster tooth in the metal, as is advocated, I paste it down with a little soft plaster on a piece of cardboard and pour the metal over it. And I find, by the way, that the only metal I can use successfully for that is a metal handled by Justi which is put up by Dr. Stafford. With it I can get more perfect cusps. Having completed my gold crown I take a small stone and cut out that portion of the gold marked by the line around facing; then I fill the cusp with 22k. solder, back up my facing, lay it in and finish with 18k. or 20k. solder. I would like to use a higher karat, but I find with 18k. I can get perfect results in all cases without danger of burning my gold. Then I have a crown that it artistic, shows no gold and my facing is protected, and I defy any man to do it in the time it can be done with the seamless method.

Dr. B. J. Cigrand: I will say just a few words. Anything that relates to prosthesis is of special interest to me, because that is the one particular department that I take an interest in. The last speaker says that he scarcely sees how the porcelain facing can be placed in a crown and get those results except by the seamless method. I wish to say that Dr. Peck some few years ago read a paper on a method of constructing a telescope gold bicuspid and subsequently placing in that gold bicuspid a porcelain facing. The method is this: After he has constructed the telescope or gold crown he simply uses a saw and cuts out that particular portion of the buccal surface that is to receive the porcelain facing. He then backs up the porcelain facing with gold, puts it in position and solders it. I will refer the doctor to that article which was published in the Review. But what I wish to say in regard to the seamless method is this: The only point, in my estimation, that appeals to me as deserving of special commendation is that it gives appearance; it reproduces nature; it gives the contour lines; it gives the buccal and the labial and the lingual bulge in bicuspids and molars. But we can get almost that result on the labial surface of a bicuspid by using the Lowry system. I have used that system for about two years and I must say that I am using it with considerable success. The system is to swage the labial portion of the band when it is still in strip form, then twist it and bind together and solder it and you have the labial contour perfect; then you solder onto that the swaged cusp. And incidentally let me say that I have entirely given up the idea of being able to fit a swaged cusp by using the die-plates. I believe that any of the die-plates are a failure. There are only three systems that I know of that will give us accurate occlusal surfaces to bicuspids and molars, and those three systems are, first the Mellotte's method, second, the Hollingsworth method and third, the carved-cusp method. The cusp must be made to fit the band. By the die method invariably we make the band to fit the cusp; we distort it and get it to fit in some way. A cusp method that gives us results, must be a method that allows us to *construct the cusp to fit the band.* And I wish to say that I agree thoroughly with Dr. Goslee. I can, for one, see no reason why we need to relegate the seam-crown for the seamless crown. One other point the section or seam crown has over the seamless is that after you have fitted the band on the root there is nothing to prevent you from seeing how it fits the root; there is yet no cusp on it; you can see whether it is an absolute fit or whether it is not; but by the method that has the cusps in position, you don't know how the circumference of the band fits because you can't see it. The seam-method allows you to build upon a foundation and create the crown in sections.

I am always interested in this field of work, and if Dr. Prothero can give us ideas that will enlighten us on this subject and make it possible to give us the same results in the seamless that we get in the sectional, I am certainly willing to see it done and learn how to do it, but until that is done I will continue to use the old method.

Dr. J. H. Prothero closing the discussion—

Dr. Taggart was right when he said that the first thing I knew I would be placed on record as being an advocate of the seamless crown.

The paper distinctly stated that I was not an enthusiast on this line of work. As many are using the system, however, I presented the method of counterdie casting, because it has some advantages over some of the commonly accepted methods of to-day. The principal object of the paper was to present the method of counterdie construction and the manipulation of fusible metal. Perhaps, if I had the naming of the paper again, I would modify its title. The construction of matrices for seamless crowns is much more difficult than for ordinary cusp work; therefore, since the system presented stands the most severe test, it certainly deserves mention in this connection.

Speaking of bridges breaking away from platinum crowns made by the seamless method, I think I can show as many bridges, proportionately, that have broken away from crowns made by the band and cusp method. When seamless crowns are to be used for abutments, a second piece of platinum should be swaged inside the crowns and allowed to cover as much of their walls as is necessary to strengthen and furnish the required stability to the abutment. Seamless crowns, properly constructed, have sufficient strength to withstand the stress to which they are subjected. Dr. Nyman labors under a misapprehension when he says that I stated that the metal does not stretch. It necessarily must stretch when swaging the crown, but I referred to the construction of the thimble and not to the crown. A thimble when run through the die plate measures the same thickness through its walls as the metal disc of which it was made. Compare the periphery of the disc used with that of the thimble, and you can readily see that instead of stretching it, it is considerably reduced. Seamless crowns constructed of gold may be strengthened as much as desired, by flowing a film of solder around the cervical periphery. The cusps of course must be thickened the same as in the ordinary manner, by flowing solder on the inside.

Dr. Nyman: I use Mellotte's metal.

Dr. Prothero: I have had more trouble with that than with any other metal. If you will immerse the plaster in your molten metal you can drive off every bit of moisture and if any gas remains in there it will be driven off as well. It is so simple and requires so short a time that the method is well worth trying in any case of fusible metal work where you want to cast counter-dies.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel, December 18, 1900, with Dr. J. H. Woolley in the Chair.

Dr. E. J. Perry read a paper entitled "Scientific Occlusion and Articulation of Artificial Teeth."

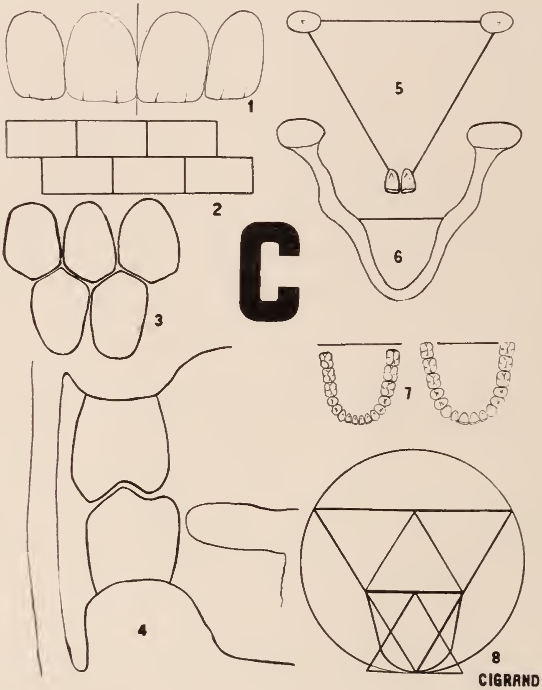
Dr. B. J. Cigrand, guest of the evening, opened the discussion. He said: It affords me a great deal of pleasure to be with you this evening. I know of the record of the Odontological Society, and am well aware that in coming here it is expected that I contribute what I can toward the subject-matter, and I must confess that this subject is one that can scarcely be thoroughly discussed in one evening, nor can we get an adequate idea of it even in a month. I had the pleasure of receiving instruction from Dr. Bonwill in regard to this matter. I have lectured on this subject five years before my classes, and this field of work is so extensive that one can scarcely grasp it the first time he attempts to study it, and the more we study it, the more is it manifest that it is absolutely imperative to understand if we are going to make any success in prosthodontia.

I congratulate the essayist on having gone into this matter so thoroughly. He calls it an attempt, but I assure you he has made a success in carrying out the ideas of Dr. Bonwill.

If you will pardon me, I will make a few suggestions that have occurred to me in the last five years. I have been deeply interested in this matter for some time and have prepared Diagrams C. D and E to illustrate. I want to emphasize what Dr. Perry has said, namely, that the ordinary open and shut articulator is absolutely a failure and does not reproduce nature. If we wish to make a success in prosthodontia, we must follow the work laid down by those who are skilled in operative dentistry by modeling after nature. The reason why Dr. Johnson and others make such a phenomenal success in operative dentistry is because they take nature for their model. Rapid strides are being made in operative dentistry. Operative dentists have done good work since observing the contact point, which is simply modeling after nature. Those who are particularly interested in prosthetic dentistry can make very little progress, can give the patient very little success, unless they do what operative dentists do, and have done, namely, to sit down and study nature, and when they have mastered nature and have put her on a pedestal as their model, they have reached the Divine origin of things. As dentists, we have been merely modeling after appearances and have been disregarding nature's demands. But I must say, the dentists in Chicago are taking the initiative in the direction of progress in every field of dentistry. That spirit permeates the air of Chicago, and I would like to see prosthetic work in this city carried to a plane where it belongs, and which is the very foundation of the profession.

I am imbued with the idea that our plate-work or artificial dentures are a failure. Let us be frank about it. They do not fulfil the purpose for which they are intended, and I want to say, that when I make this remark to this Society, I am aware of the fact that it has in its membership the intelligent element of the profession. Artificial dentures, as made at present, are certainly a failure as compared with nature.

To begin with, I have prepared several Diagrams—C, D and E—and I do not quite agree with Dr. Bonwill, although I received my instruction directly from him. I recognize Dr. Bonwill as a great exponent in dentistry and in mechanics especially. I want to confess that the first two diagrams A. and B. do not meet with my approval *in toto* ; in the main, they do. As Dr. Perry has said, credit should be given to all inventors or discoverers for their work, but these inventions may be so modified or changed that their originators will hardly recognize them. Let us look at the inventions of Howe, McCormack, and other inventors. Their inventions have been very materially modified. And so if I criticise what Dr. Bonwill has given to the profession, it will not be in regard to its fundamentals, but merely in its superstructure. I feel that he has utilized too much, made it too complex, and that his knowledge of geometry does not correspond with what I have learned of the shape of the jaws. I



will show you later what I have gotten as the geometric proposition and theorem, and will explain it, in that it is simpler than Dr. Bonwill's, although it is founded on the Bonwill theory.

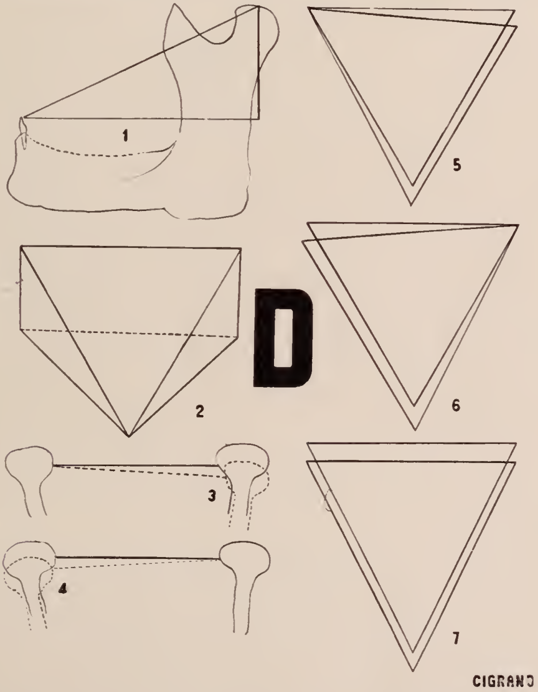
In the first place, nature is so disposed that the anterior teeth fall and pitch toward the median line. (Diagram C, Fig. 1.) The teeth are arranged as a bricklayer arranges his bricks, so that one brick breaks the joint of the other, in that one tooth is rested upon by two other teeth; that the upper two always come in contact with the lower one, and the lower two come in contact with the upper one. (Diagram C, Figs. 2 and 3.) This I will explain a little later.

I do not agree with Dr. Bonwill in another particular. He cuts his teeth after this fashion (Diagram B, Figs. 4, 5 and 6—illustrating), and these are diagrams from his own drawings. He has the lower teeth here with the lingual cusp too high on both the right and the left, and he has the upper palatal cusps too prominent. I believe that if he had them more rounding after this fashion (Diagram C, Fig. 4—indicating), so that they would glide over each other and facilitate mastication, it would be better. Here we have the upper. The tongue directs the food up in here, and the cheek draws the food up in here (Diagram C, Fig. 4—indicating), causing a battle of forces between the tongue and cheek, mixing, as it were, the food immediately beneath the opposing cusps. This goes to explain why the tongue and cheek are not molested during mastication, because the inferior teeth extend to the inside of the mouth, and the superior teeth to the outside of the mouth.

This equilateral triangle (Diagram C, Fig. 5) we get from the center of the superior left to the center of the superior right condyle down to the anterior portion of the lower incisors, and we have an equilateral triangle of the dimensions given. A shadow view of the inferior maxilla gives me the result of the shadow (Diagram C, Fig. 6.) These are condyles (indicating), and this is the shape of the jaw, giving you the equilateral triangle. It is here that I begin to criticise Dr. Bonwill's theorem of geometry. The human jaws, in both the inferior and upper, are not so pointed as Dr. Bonwill has drawn them. They are not so sharp as Diagram A, Fig. 5. I have brought specimens with me to-night to demonstrate that the human jaw is not so sharp and pointed as he has portrayed it. He has simply gotten the wrong theorem. These drawings are somewhat crudely made, but they illustrate simply that Dr. Bonwill's philosophy is correct in the main, but the geometric theorem he illustrates is wrong. The lower jaw is round and full, and the upper, too. (Diagram C, Fig. 7.) Reverse these (indicating by showing numerous plaster models), and you will see the point. This is a case from actual practice. I believe Dr. Perry's models illustrating Bonwill's theory, go to prove what I contend and am trying to prove. I think you will agree with me that the theorem of Dr. Bonwill is wrong when I get through. Here is another model that goes to show that the jaw is not pointed. Here are models showing the same thing (demonstrating). The specimens exhibited by Dr. Perry please me very much, in that they fortify my position.

To go on a little further, the jaw as indicated by Dr. Bonwill is too pointed, as is shown in Diagram A, Fig. 5. This is the theorem as I can work it out. (Diagram C, Fig. 8.) In the first place, we use a circle simply to get a perfect equilateral triangle, because geometry says the only way to make a perfect equilateral triangle is to design it in a circle. Three lines of equal length, joined within a circle, makes a perfect equilateral triangle according to the theorems of geometry. After I have gotten my perfect equilateral triangle, I find in the lower half or the anterior half of that triangle is the position of the teeth. That is simple. This marks the point of the last tooth. Geometry tells us that two equilateral triangles brought into apposition with their cones form the outer surfaces of a perfect square, the center of which describes the arc of a circle. From that point to the other point, which is from here to there (indicating), is a line drawn straight. (Diagram C, Fig. 8.) I have drawn and figured on this for something like two years, and I have discussed this matter with professors of geometry, both at the Chicago University and the Northwestern University, and I have interested them sufficiently in the study of dentistry to go into this matter with me, and they say the fundamentals of Bonwill's discovery are correct; that he is all right, with the exception that he has accepted the wrong geometric theorem. The theorem which gives this result, and Figs. 7 and 8, Diagram C, is an illustration of what is actually found in the human mouth. You will observe that we do not need all the curves or all the lines of Diagram A, Fig. 5, and Bonwill has another diagram which has something like fourteen circles, and twelve different lines on it. He has a circle here, and another line (indicating), and all the way along to prove this big circle. He does not need any of those. It is a question of triangles within a circle, and triangles within a triangle, and a perfect triangle when divided through its center creates four other triangles (Diagram C, Fig. 8). These two triangles (indicating), when brought into apposition to each other, describe the outer surfaces of a square, the center of which describes the arc of a circle. I am not bringing this matter before you without any thought or consideration, because, as I have previously remarked, the subject has been studied relative to geometry, and I certainly think we have the geometric proposition right there, based on the discovery of Dr. Bonwill.

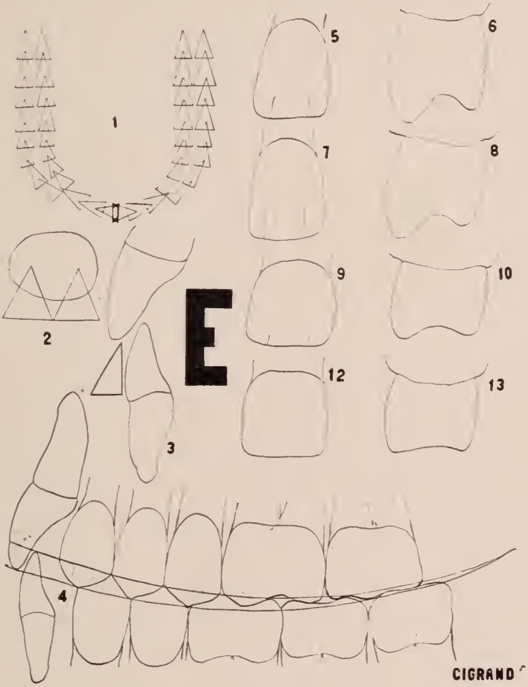
Before leaving this diagram (C, Figs. 5, 6, 7 and 8), you will notice that mine are reversed, Dr. Bonwill's having the apex of the triangle from you. The apex of my triangle is in front of us, for the simple reason we are taught in dentistry, as in anatomy, to study the human being from the median line. Instead of looking at the jaw from the distal surfaces through a person's throat, we are looking at our subject as you would look at him from the chair, namely, from the median line. This is the superior triangle. Here we have a lateral triangle, as I would call it (Diagram D, Fig. 1). This lateral triangle, when we come to the superior triangle, will give a surface



like this (indicating). The jaw then describes another triangle. The right condyle remains stationary when the jaw moves in the right direction. When you throw the jaw to the left, the left condyle remains absolutely in position, and merely turns around. If you throw the jaw to the right, the right condyle does not move a particle, but simply twists around. The result is it will describe imaginary figures 5, 6 and 7. The depth of the triangle is in proportion to the depth of the glenoid fossa. If the glenoid fossa be deep, it will describe a deep triangle. If the glenoid fossa is shallow, it does not describe such a deep triangle. Here we have a triangle towards the left (Fig. 3), and at this point we have a triangle towards the right (Fig. 4). What does that do? It gives us lateral movement of the jaw, the triangle here being pinioned. This side falls out, and if it is a perfect triangle in unity, all surfaces must move in the arc of a circle. If you pinion the triangle right there, the outer lines here all around, if you swing them around, would describe the arc of a circle, and this angle (indicating) would move as far from that point as this would move in the direction there (indicating) where it was, because it is united. The same is true with the jaw from the left to the right side. The triangle is formed from there to there, and we have the sectem. A sectem is that portion of a circle described between two radii, and having the arc of a circle as a base. Here is another triangle, a fourth triangle, going to prove that the jaw, instead of being founded on a geometric principle of a circle, is based on the theoretic principle of triangles. When the jaw is pitched forward, it will pitch as far forward as the glenoid fossa will allow—to the eminencia articularis. Here we have it pitched to the left (Fig. 5) and to the right (Fig. 6), and here it is directly forward (Fig. 7).

Here is another point I labored with (Diagram E, Fig. 1). This demonstrates to you, and no doubt you have possibly thought of the same idea, what imaginary lines are described by the cusps of the various teeth in mastication. In masticating think what imaginary lines are travelled by the various cusps. After some years of thought in connection with this matter and experimenting in different ways, I found the cusps also described a triangle. First, they pitch in this direction (right), then across (left), and then back (normal). If these are the cusps of the bicuspids, each cusp will have a triangle of its own (Fig. 2). We have four cusps on the molars, and these are made by carbon prints on tissue paper between cardboard, in the mouths of people, and invariably we get a diagram of that character.

Here is another triangle showing the mechanical construction of the lower jaw, founded not on circles, but absolutely on triangles.



Another point. The jaw describes another triangle. In opening the mouth the lower jaw falls down this way (indicating), bringing it forward, then bringing it up to cut. Another triangle is formed. You will see here that I have exaggerated the opening of the jaw to show you the principle. I simply allow the jaw to fall, and that is what mastication does. It describes a triangle in masticating (Fig. 3).

Another error which Dr. Bonwill fell into was that he did not observe the cusps *did not form from a straight line,* but from *a curved line* (Fig. 4). The diagrams show that they are not pitched on a straight line. The second bicuspid is absolutely vertical. When a patient stands up straight, all the teeth pitch towards that line. The result is there is a circle described; and it is a circle in proportion to the length of the overbite (Fig. 4). If you have an individual in whom the teeth are smooth and flat, there is no curve, but there is a curve in proportion to the overbite.

Another point in relation to this matter, which is of interest, is the fact that we as dentists do not observe the principles and the philosophy of mastication, and we do not give sufficient notice to the shade, size and the shape of the teeth. For instance, here I have a diagram of the individual with motive temperament, an individual with strong angular outlines (Figs. 5 and 6), the bony framework giving teeth after this fashion (indicating). The bicuspids will develop full cusps. In the individual with a mental temperament, which is more rounding and more muscular, the teeth assume a more oval character. The cusps are less prominent, whereas the buccal cusps seem to fade away (Figs. 7 and 8). Here we have an illustration bearing upon the sanguine temperament; the lines of the teeth seem to fade out, and the bicuspids again are losing their identity in the way of cusps (Figs. 9 and 10). In the lymphatic temperament we have the width and length of the teeth alike; the bicuspids scarcely show any cusps whatever (Figs. 12 and 13). It is these things that we have yet to solve. These are but the stepping-stones for further light. There is so much to learn along this line, and so much to improve that we are just beginning to obtain some of the light that Dr. Bonwill pointed out for us.

Referring to what Dr. Perry has said, it is bordering on disgrace to think that Dr. Bonwill's discovery had to go begging to get into print. We frequently talk about how the ancients treated discoverers. Think of the manner in which Columbus was treated by Spain for discovering the Western Continent. Think of how Galileo was treated by the Inquisition, and then talk of those men who have delivered goods to the world, and how ungrateful the world is. We need not go back to the ancient world to see this indifference shown toward inventions or discoveries, but it is equally manifest in the modern world. Here is a case where a man discovered a great principle in dentistry, and yet his article promulgating the discovery went begging for thirty years. I desire to pay a compliment to Dr. Bonwill, as I regard him as one of the greatest geniuses that the profession has ever had in prosthodontia.

I am glad to join hands with any man who is interested in working out this matter. I am one of those who is ever ready to gather around a table; stand up to the blackboard; go into the laboratory, and work out this problem in order to get additional light which we may use for the benefit of mankind by giving them good artificial teeth, modeled after true nature.

DR. J. G. REID: I am willing to bow to the inevitable and say that my knowledge of prosthetic dentistry is too limited to add anything to this paper or to criticise it. I do so little in this line of work that I am not willing to appear before a society to discuss it. It is a branch of dentistry that is distasteful to me. I have read some of Dr. Bonwill's papers, and it has been a pleasure to me to listen to him on many occasions. While he has been considered a crank on many things, yet there is no doubt but what he could back up almost anything that he undertook to explain upon a scientific basis.

The Society is to be congratulated on having heard such an excellent paper as that presented by Dr. Perry, and also on the explanations which Dr. Cigrand has given us by the aid of diagrams. He has certainly made the subject reasonably clear to an ignorant person.

DR. E. R. CARPENTER: I did not expect to be called upon to say anything on this subjejct, because I am incapable of discussing either the excellent paper of Dr. Perry or the intelligent opening remarks by Dr. Cigrand. The subject has given me much food for thought, and I shall endeavor in the near future to delve into the subject more deeply than I have in the past.

It has been my pleasure to have listened to Dr. Bonwill on many occasions. He lectured on this subject in the college from which I graduated. Fig. 5 was always a stumbler to me, but Dr. Cigrand has made it reasonably clear in Fig. 8. He has looked at it from the median line, instead of through the throat, and this simplifies the whole matter.

DR. E. A. ROYCE: I have been very much interested in the paper of Dr. Perry, also in the discussion of Dr. Cigrand. Prosthetic dentistry has not been made a specialty by me for a good many years, but I think it is time that some of us should adopt that work as a specialty and advance it. I have been engaged in some particular lines of prosthetic work for the past twenty years, and I hope to place before this Society some time within the next year the results of my observations.

The question of occlusion of teeth is one of the most important we have to contend with in artificial work. In this statement I can include crown and bridgework, as well as dentures. A large number of crowns and bridges are made absolutely useless; the abutments are entirely ruined by malocclusion, caused by a lack of study of the principles that we have been listening to this evening. Like the rest of the profession, I have been a little reluctant to study Dr. Bonwill's figures. Some years ago I became interested in his anatomical articulator, and as it is improved at the present time it is the nearest to an articulator and occluder, according to Dr. Perry's definition, of anything I have seen.

There are one or two questions I would like to ask that may not be pertinent. The first is, how are we to tell the compensating curve? How are we to get a measure of it so as to make it absolutely correct? The overbite of a tooth and the distance that the lower jaw comes down when it is projected must both be considered, or must bear a certain relation to each other, in order to make artificial dentures properly articulate and properly occlude when the lower jaw is projected, so that the posterior portion of the superior denture will be held in place. As to the average distance from the condyle to the median line of the lower incisors, is it right for us to take an average for that? Should we not take a measure? We can find the condyle and bend a piece of wire so one end will rest upon it, and the other be at the points of the teeth, and drawing a straight line between the ends of the wire will give the distance without the use of any other appliance. How do we get the compensating curve? It has to do with the overbite to some extent, but is the drop of the lower jaw always in proportion to the overbite? If so, how are we going to tell in different patients? Can't we take a measure to determine it? I am anxious to receive that information, either from Dr. Perry or Dr. Cigrand.

Dr. B. J. Cigrand: Since I brought up the questions touched upon by Dr. Royce I would say that the compensating curve is according to the overbite, and the overbite is in proportion to the marked development of these cusps, and when a patient comes to you for the treatment of the teeth, the first thing you must know is the psychology of the face. You must understand the four different teeth you are going to put in the mouth. The overbite is in proportion to the depth of the glenoid cavity. If this is deep, the overbite is deep. If the glenoid cavity is shallow, the overbite is rotary in nature and shallow. If a patient comes to you without teeth you have to know something about the psychology of the face, and patients should be classified into the motive, mental, sanguine or lymphatic temperament, and according to the disposition or temperament of the patient will be the compensating curve.

Yesterday I spent much of my time in consulting anatomies regarding this point. I found that the glenoid cavity was shallow in some skulls and deep in others. After examining some twenty skeletons I found that there were no two skeletons alike. When the glenoid cavity is shallow I found that the cusps were flat, and when the glenoid cavity is deep the cusps are prominent.

Dr. E. A. Royce: I have spent a little time in studying the matter of articulators and their use. I supposed, of course, there must be some rule which governs these things, but so far as my reading and observation have gone Dr. Cigrand has answered the question in a manner that I have not seen it or heard it answered anywhere else.

I wish personally to thank both Drs. Perry and Cigrand for their work this evening, never forgetting the work done along this line by Dr. Bonwill. We are under great obligations to Dr. Bonwill, not only for prosthetic work, but operative dentists owe him a debt of gratitude. Although he was sometimes over-enthusiastic and perhaps too positive to impress dentists favorably, still of all good things that have come from dentists I have known as many to have come from him as from any one man in the profession.

Dr. C. N. Johnson: I hesitate to take up one moment's time of the Society, because I must confess that I know very little about this subject, yet I am deeply interested in it and have been very much encouraged from what I have heard this evening. I have felt, as many others have, that prosthetic dentistry has not been given the attention that it deserves. It has not been studied from a scientific point of view as have other subjects, as stated by Dr. Cigrand.

I want to pay my tribute to Dr. Bonwill because of the many excellent suggestions he has made in this connection, and the fact that he has set the profession thinking upon it. I also desire to express my appreciation of the paper and the practical benefit which we have derived from the opening remarks of Dr. Cigrand.

There is only one thing that occurs to me in connection with the articulation of teeth, and that is this: To-night we are studying these models of artificial teeth, as we see them here, and the matter of articulation, as outlined in the paper and from Dr. Bonwill's system. I have been studying articulation from another point of view. I have been studying the actual process of articulation and mastication in the mouths of people, and the one thing that has impressed me more than anything else is the fact that hardly any two people masticate the same, or make the same movements of the jaw. I have watched them particularly in relation to the direction of force exerted upon fillings in the mouth, and I have almost made myself rude in public places watching people masticate.

This matter has appealed to me to-night, and while I grant that the Bonwill method of articulating teeth is probably the best that can be done, at the same time we must never forget that we may put teeth into a patient's mouth which call for a certain movement of the jaws which was not the one that the patient originally had when he possessed his natural teeth. This must be borne in mind when we insert artificial teeth, and the patient must learn to masticate over again. I would urge the members of this Society and of the profession generally to study the matter of the movement of the jaws in mastication in the mouths of the people. It is a most interesting subject, and while I started out with the idea that I knew pretty well how people moved the lower jaw in mastication, and we had brought it down to a pretty exact science so far as calculating the direction of force in mastication, I have come to the conclusion that we are not sure of it. I at least am not, because people move their jaws in so many diverse ways in masticating. I believe, however, in very many instances that it is due to habits of mastication that are induced by imperfect conditions of the natural teeth, and when we study the whole thing it narrows itself down to the point that we should, above everything else, strive to keep the natural teeth in a normal condition.

A great compliment has been paid to operative dentistry to-night in the consideration of the subject before us, but I tell you, not only with regard to prosthetic but with operative dentistry, we are only beginning to see little rays of light here and there, and I am more encouraged now than I have been at any time in all of my enthusiastic professional life, because I believe the profession are beginning to think. I have been immensely pleased to-night on account of the principles that have been enunciated. I believe prosthetic and operative dentistry will move along hand in hand to the end that we give our patients better service in both departments.

Dr. J. W. Wassall: I have been very much interested in what has transpired to-night. It is in the nature of a revelation to me to know that there have been certain laws discovered by Dr. Bonwill that were such as could be acted upon and put into practice, and I feel as though I have wasted a good deal of my professional life in not knowing them.

I have seen these charts and diagrams at different times in the American System of Dentistry and in the books of Dr. Bonwill, but I never had taken pains to investigate them, for which I am now sorry, believing from what I have heard this evening there are very valuable points of which the profession has not up to this time taken advantage. They are entirely new to me, and I believe to Dr. Perry, who is only just beginning to find the light himself. I have talked with him two or three times, and his enthusiasm about this matter has spread to me. I shall study this subject in the future and see if I can settle the matter to my own satisfaction. I really believe that I shall find some good in it.

The next time I get a practical case in prosthesis I shall, instead of considering it a nuisance, take the pains myself and grind up the teeth. I shall take renewed interest in that sort of work, which very rarely comes my way.

I feel a deep sense of obligation to Dr. Perry for introducing me to these theories, and to Dr. Cigrand for his elucidation of them and the additional light he has thrown on the subject.

Dr. J. H. Woolley: I was pleased to listen to such an able paper from Dr. Perry, and trust it will increase our interest in prosthetics. This subject, if duly considered, calls forth all the imagination which we can afterwards work out in a technical way, and is one which leads us also into art lines, as in the study of the composition of the human face. My experience has led me to believe that the formula given us by Dr. Bonwill cannot be followed out too closely in practice, because the muscular movements of the jaws in different individuals vary. Therefore, in making partial or full dentures, we have to individualize each case by itself. Corydon Palmer of New York has studied very thoroughly along these lines, and I became quite familiar with his work during my early practice. I tried to follow his methods, and in nine years' practice I found that the mouths of patients after extraction of teeth differed in general shape and contour very much. Where the teeth were removed, one or more at a time, on different occasions, the process of absorption went on in an irregular way, and if we made a denture according to certain geometrical lines the relation of the jaws to each other could not be sustained. For the same reason, if one tried to get a certain occlusion uniformly, trouble would arise and the result would be failure. We have to arrange the denture according to the condition of the mouth, which is determined by the personal peculiarities of the patient in the movement of the muscles of the jaw.

Dr. E. A. Royce: Dr. Johnson and Dr. Woolley have spoken in regard to the different lines for the mastication as carried on by different mouths. As I understand it, the Bonwill articulator, and some other articulators, are made to imitate any motion that any mouth can make. In other words, we have got all the movements here that the condyles are capable of. If the compensating curve is correct, and the articulator is made correctly, I fail to see how we can get any movement in the mouth that can not be imitated with these models. This (referring to model) is a beautifully occluded case. You cannot do as well with a straight articulator. The moment you use that and fail to grind the teeth according to the directions given us to-night you will have trouble with the different movements of the mouth, because the old articulator was simply this movement (indicating).

Dr. Johnson: I referred more particularly, Dr. Royce, to the unusual habits of closing and moving of the jaw that patients very often acquire; that in putting in a set of teeth like this (referring to model), for instance, the patient would have to get accustomed to the artificial set and to other movements of the jaw that he had not been in the habit of using, particularly if only a few natural teeth had been left to masticate on toward the last, and he might have to form habits of movements in certain directions. I have seen patients in whom mastication was performed on two natural teeth, and the point I desire to make is, that the best we can do is to instruct a patient with artificial teeth to acquire new habits of movement of the jaw in order to get the full benefit.

Dr. Royce: If the teeth are properly occluded the patient can bite where he wishes, and still the upper plate will be held in place by the lower teeth. A change in the mechanical apparatus might change the habit of the mouth after a little. But with the old articulator patients had to learn the up and down bite.

Dr. Perry (closing the discussion): I want to thank the members of the Society for their complimentary references to the paper. I also desire to thank Dr. Cigrand for making these drawings. He is in exact touch with me in the matter of prosthesis, as well as in the study of those principles that have been laid down by Dr. Bonwill, and further elaborated by Hesse, who read an article on this subject at the International Dental Congress in Paris. I have not seen or read this article, but Dr. Cigrand took extensive notes of it and made copies of the diagrams that were exhibited in connection with the paper, so that I have been able to get some idea of this great mechanic's method, who has simply followed the principles that were mapped out by Dr. Bonwill. I wish also to thank Dr. Cigrand for the original work he has done as shown by Diagrams C, D and E. I have special reference to Diagram C, Fig. 8. I have not studied this theorem, but it is evidently correct. He says he has submitted it to some eminent scholars who affirm it. This is to my mind nearer to life than what is shown by Dr. Bonwill in Diagram A, Fig. 5. This diagram shows the jaw too triangular or pointed. There is not curve enough. Besides, Dr. Cigrand's theorem proves out by all the models here shown. In Diagram E, Fig. 1, a series of triangles are described by the movement of the cusps in the act of mastication. Again, in the same diagram, Fig, 3, the cutting edge of the inferior incisors describe a triangle in the operation of the lower jaw in biting as it slips into its position of full occlusion. In Diagram C, Fig 4, I gladly accept the suggestion as an improvement over the Bonwill idea shown in Diagram B, Figs. 4, 5 and 6. In this whole matter Dr. Cigrand has very beautifully continued, added to, modified and improved on the ideas of Dr. Bonwill. This has cost the Doctor many hours of study. He is well-equipped with a thorough knowledge of geometry and trigonometry and his theorems are easily affirmed, as he says they have been. The principal and most important point of all this work is, can we render better service to our patients? If this work is of no practical significance then it amounts to nothing. The only way to get hold of a thing is to *take hold* of it and write about it, and then we will be able to get an insight into it.

The upper jaw is like a pestle, and the lower jaw, the mobile part, is like the mortar, and when the mortar is moved against the pestle we have the grinding movement. We simply reverse the process. The mobile part is the mortar, and the stationary part is the pestle. In general terms, the teeth should be made to conform to that general idea, because it concerns the movement of the jaw.

So far as the overbite is concerned, or end to end occlusion, as we see it in many cases, or the protruding under jaw, the teeth have to be arranged in such a way that this particular motion can be accommodated. While I do not know of any scientific rule that can be laid down and of instruments that can be used to determine the exact dip of this compensating curve in relation to the particular overbite in each individual case, I can answer the question in no other way than simply to say that we have got to guess at it. We know in a general way that the depth of the overbite measures the length of the cusps on the grinding set and that the length of the cusps also measures the depth of the compensating curve. The longer the cusps the greater the curve must be to accommodate the rotary movement of the jaw; and as the bite approaches an end-to-end occlusion of the oral teeth the compensating curve straightens for the very same reason. We have to study carefully each individual case. We must study the face; we must study the temperamental indications. However, that is another part of the subject, and does not particularly concern my paper, as in my remarks I had reference particularly to the scientific articulation and occlusion of artificial teeth.

THE EIGHTH ANNUAL CLINIC OF THE ALUMNI ASSOCIATION OF THE CHICAGO COLLEGE OF DENTAL SURGERY, HELD AT THE COLLEGE BUILDING, JANUARY 23, 1901.

Reported by R. C. Brophy, M. D., D. D. S., Chicago, Ill.

CLINIC NO. 1—"SURGICAL CLINIC." DR. T. W. BROPHY, CHICAGO.

Patient, child, seven months of age, presenting cleft palate and double hare-lip with protrusion of the intermaxillary bone to a line with the point of the nose. The palate having been closed at a previous operation, this operation consisted in bringing the intermaxillary bone into position; this was done by cutting a V-shaped piece out of the vomer to allow the necessary retrusion. After denuding both ends of the intermaxillary bone, as well as the anterior surfaces of the right and left alveolar ridge of the superior maxillæ, the intermaxillary bone was put in position and held there by two silver wires.

CLINIC NO. 2—"PORCELAIN CONTOUR WITH WIRE RETENTION." DR. FREDERICK J. CAPON, TORONTO.

The ordinary method of retaining porcelain inlays through dependency of cement alone, seems to be greatly improved upon in the method demonstrated by Dr. Capon, as, in his method, the force of adhesion of the cement is mechanically aided in retaining the inlays by a platinum wire being baked in it and anchored in the cavity.

CLINIC NO. 3—"ABUTMENTS FOR REMOVABLE CROWN AND BRIDGE WORK." DR. JAMES P. NICHOL, PHILADELPHIA.

Dr. Nichol's method of preparing abutments for removable crown and bridge work, as shown in his clinic, is as follows:

A half-round wire of a size which, when bent upon itself, will be proportionate to the size of the canal or root in which it is to be placed (ranging from No. 15 to No. 18) is first bent upon itself, and then is tacked together at each end with solder; they are then separated slightly in the center, or between the points soldered. A piece of 33-gauge platinum plate is now wound snugly around this post and soldered. This tube is now placed in the root canal and made permanent by filling around it with gold. The post, acting as the post of the crown, through its springy convexity, enters the concavity of the tube with a snap, and holds it firmly in place.

The sample pieces exhibited by Dr. Nichol were very beautifully executed.

CLINIC NO. 4—"DEMONSTRATION OF THE REMOVAL OF A DIGESTED PULP BY THE USE OF A PASTE COMPOSED OF PAPAIN I GRAIN, GLYCEROL I MINIM, AND I GTT. SOLUTION OF HYDROCHLORIC ACID I TO 300." DR. A. W. HARLAN, CHICAGO.

After a pulp has been devitalized, to thoroughly remove the matter from the canal is oftentimes extremely difficult. The discovery by Dr. Harlan of an agent, which when sealed in contact with the pulp matter, digests it, and converts it into a jelly-like mass easily removable from the most delicate canals, is a decidedly important one. The method of using Dr. Harlan's "papain paste" is as follows: After a pulp has been thoroughly devitalized, it is washed with a mildly acidulated solution of water, acetic acid, trichloracetic acid, or any other acid answering the purpose in making this solution, and the paste is then applied directly to the remains of the pulp, sealed in with cement or gutta-percha, and allowed to remain one, two or three weeks, according to the bulk of tissue to be digested. Papain paste is absolutely nonpoisonous and no harm can come from its use. Dr. Harlan's experiments with papain have extended over a period of several years, and he does not hesitate to recommend its use to the profession.

CLINIC NO. 5—"TABLE CLINIC. REMOVABLE BRIDGE WORK." DR. W. E. GRISWOLD, DENVER.

The clinic of Dr. Griswold commanded much attention by reason of the fact that the idea he introduced is original, novel and withal practical. The principle of the Doctor's method of attachment is very similar to the ordinary glove fastener. Expansive lugs are made to fit into sockets. These lugs and sockets are furnished the profession by Dr. Griswold.

CLINIC NO. 6—"THE CONSTRUCTION OF A PORCELAIN BICUSPID CROWN." DR. H. J. GOSLEE, CHICAGO.

The duties of Dr. Goslee as chairman of the executive committee prevented his giving clinic as announced.

CLINIC NO. 7—"SURGICAL CLINIC." DR. CARL BECK, CHICAGO.

The clinic of Dr. Beck was of the plastic order, and consisted in restoring a nose lost through the ravages of syphilis. The nose had originally been completely eaten away, but the patient (a woman forty-five years of age) had been operated upon twice previously to this clinic, the case requiring the work to be done in stages. The operation preformed by Dr. Beck at this clinic was the final one and consisted in bringing down a flap from the forehead and applying it to the restoration of the bridge of the nose.

The accomplishment of Dr. Beck in this case is of the highest ideal in plastic surgery, and due praise was accorded him by the interested spectators of his clinic.

CLINIC NO. 8—"LARGE GOLD FILLING USING ELECTRIC MALLET." DR. B. G. MAERCKLEIN, MILWAUKEE.

A double compound filling in a second upper molar was inserted by Dr. Maercklein. Eighteen sheets of gold were used. The work was very rapidly done, and presented a highly artistic appearance when finished.

CLINIC NO. 9—"PREPARATION OF ROOT FOR CROWNING." DR. J. E. NYMAN, CHICAGO.

Dr. Nyman prepared a left central root for porcelain crown, and fitted cap to same.

CLINIC NO. 10—"DEMONSTRATION IN THE USE OF DR. J. B. MORGAN'S BRIDGE ATTACHMENT." DR. L. W. SKIDMORE, MOLINE.

Space does not permit a detailed description of Dr. Morgan's method, but inasmuch as it has many very excellent features it is suggested that Dr. Skidmore, or Dr. J. B. Morgan, Davenport, Iowa, be addressed for full particulars.

CLINIC NO. 11—"AN EXHIBIT IN PROSTHESIS." DR. E. J. PERRY AND DR. B. J. CIGRAND, CHICAGO.

Principles and practices in the use of the Bonwill articulator were demonstrated in this clinic.

CLINIC NO. 14—"COMBINATION FILLING, STARTING WITH WILLIAM'S CRYSTALLOID GOLD NO. 2; FINISHING WITH WILLIAM'S GOLD AND PLATINUM FOLDS NO. 2. ANNEALED WITH A CUSTER ELECTRIC ANNEALER." DR. GEO. B. PERRY, CHICAGO.

Dr. Perry inserted an occlusal filling in a right superior first molar. The advantages claimed by the clinician for this method of filling are greater facility in anchoring, greater speed and more desirable color when finished.

CLINIC NO. 16—"DEMONSTRATION CLINIC ON BUILDING THE BITE TO RESTORE A NATURAL OCCLUSION IN CROWN AND BRIDGE WORK, AND EXHIBIT OF DEVICE FOR MEASURING THE RELATIVE POSITION OF ABUTMENT TEETH IN CROWN AND BRIDGE WORK." DR. J. P. CARMICHAEL, MILWAUKEE.

The clinic of Dr. Carmichael covered some important details in crown and bridge work quite ordinarily neglected, and attracted much attention.

CLINIC NO. 17.—"A DETACHABLE FACING." DR. W. H. DWIGHT, LE MARS, IOWA.

The demand for a tooth facing which is placed in position after the metal construction is completed, and which may be replaced without removing the crown or bridge from its abutments, is met by the facing invented and exhibited by Dr. Dwight. The simplicity of the method of attachment of the Doctor's facing called forth very favorable comments.

CLINIC NO. 18—"PYORRHEA ALVEOLARIS (DR. YOUNGER'S METHOD)." DR. ROBERT GOOD, CHICAGO.

The method of treating pyorrhea as practiced by Dr. Younger, consisting in removing all accumulations from the roots, then applying lactic acid, was demonstrated by Dr. Good.

CLINIC NO. 19—"SURGICAL CLINIC." DR. W. H. G. LOGAN, CHICAGO.

The operation performed by Dr. Logan was the removal of a fibroma or epulic tumor from the lower left, maxillæ of a woman thirty-five years of age.

The tumor extended from the labial to the lingual of the alveolar process and involved the cuspid tooth. Removal of the tooth was deemed advisable and this was done, the tumor then being removed. Hemorrhage was controlled by hot compresses.

CLINIC NO. 20—"AN APPLIANCE TO KEEP FIELD DRY WHILE SETTING CROWNS AND BRIDGES." DR. J. J. WRIGHT, MILWAUKEE

A simple mechanical appliance was shown, practically, by Dr. Wright, which, being held firmly against the tissues at either side of the alveolar process effectively excludes all moisture and, in addition, serves to hold back the cheeks and tongue.

CLINIC NO. 21—"EXTRACTING UNDER NITROUS OXIDE." DR. L. W. NEVIUS, CHICAGO.

Dr. Nevius demonstrated not only the administration of gas, and extracting thereunder, but its manufacture. The senior students of the college, particularly (juniors and freshmen were barred from the college for the occasion), were much interested in Dr. Nevius' clinic.

CLINIC NO. 22—"REFITTING DENTURES WITH NEW PROCESS OXYPHOSPHATE OF COPPER." DR. W. V-B. AMES, CHICAGO.

Dr. Ames demonstrated the possibility of refitting dentures by simply placing some new process oxyphosphate of copper mixed to a stiff creamy state, upon the defective surface, and pressing accurately to place, allowing the cement to set in contact with the tissues.

This refit, it is claimed by Dr. Ames, will apply to cases in which a plate has been made soon after extraction, those in which tissue has become flabby and yielding, and those entire dentures in which a leak at the periphery easily admits air beneath the plate.

CLINIC NO. 23—"EXHIBIT OF DISSECTIONS MADE BY STUDENTS OF THE COLLEGE." DR. L. C. BORLAND, CHICAGO.

The excellent work of the students of the College in dissecting, attracted much attention and admiration.

CLINIC NO. 24—"THE CONSTRUCTION OF A PARTIAL DENTURE OF CONTINUOUS GUM." DR. C. F. BRYANT, CHICAGO.

The clinic of Dr. Bryant consisted in the construction of a partial continuous gum plate wherein application of the porcelain was restricted to the alveolar ridge. The palatal surface was reinforced for additional rigidity and wired at the line of the porcelain for its better retention as well as greater strength. The plate was baked in Dr. R. C. Brophy's gasoline furnace.

CLINIC NO. 25—"CLEAVAGE OF ENAMEL PREPARATORY TO CROWNING, WITH INSTRUMENTS OF THE CLINICIAN'S OWN DESIGN."

DR. A. G. JOHNSON, CHICAGO.

A result in instrumentation of careful study as to most effective blades and most convenient forms was shown in Dr. Johnson's clinic.

CLINIC NO. 26—"ANTERIOR FILLING OF MOSS FIBER GOLD." DR. R. B. TULLER, CHICAGO.

Dr. Tuller demonstrated the availability of crystal gold (moss fiber) for entire fillings, contour or otherwise. The filling inserted was in the disto-proximal surface of a left superior lateral incisor. The work showed exact adaptation to margins and sustained a fine polish.

In speaking of his clinic, Dr. Tuller said: "I do not advocate the use of any one preparation of gold to the exclusion of others. Personally, I use what seems to me best adapted to the case in hand, sometimes foil gold, other times crystal gold, and very frequently the two kinds in the same cavity, just as utility and convenience may suggest. Many dentists entertain the erroneous belief that an entire filling cannot be made of moss fiber gold, especially contour work. Like any other gold it needs to be understood and properly handled. I believe it to be quite as adaptable, all around, as foil and in many cases it permits of more rapid work."

CLINIC NO. 27—"PORCELAIN INLAY." DR. W. T. REEVES, CHICAGO.

The beauty of inlay work skillfully executed, was shown in this clinic.

CLINIC NO. 28—"THE ADJUSTMENT OF A GOLD CROWN WITH A SPECIAL INSTRUMENT DESIGNED BY THE CLINICIAN." DR. RUDOLPH BECK, CHICAGO.

Dr. Beck's instrument, which is of the nature of pliers, accurately adjusts the metal to the root.

CLINIC NO. 29—"AMALGAM FILLING WITH MATRIX." DR. A. F. JAMES, OAK PARK, ILL.

Dr. James showed the expediency of using a matrix in inserting large amalgam fillings.

CLINIC NO. 30—"AN EXHIBIT OF ORTHODONTIA APPLIANCES." DR. CARL CASE, CHICAGO.

An exhibit of some appliances used by Dr. C. S. Case, in his practice.

CLINIC NO. 31—"BAKING CONTINUOUS GUM CASE, USING CLOSE'S BODY AND GASOLINE FURNACE." DR. R. C. BROPHY, CHICAGO.

This clinic was designed to demonstrate that the fact of lack of electricity is no bar to the practitioner doing porcelain work if he so desires.

Two continuous gum plates were baked—one, second baking, was accomplished in ten minutes, and the other, first baking, in eight minutes. Close's body was used and the baking was done in the clinician's gasoline furnace.

CLINIC NO. 32—"METHOD OF SAVING A BADLY DECAYED TOOTH BY REPLANTATION." DR. J. E. KEEFE, CHICAGO.

The tooth replanted by the clinician was a right superior lateral, badly decayed and fractured on the labial surface to the process. An X-ray taken before the operation indicated a sac at the end of the root, and the sac was found when the tooth was extracted. Upon removing the sac it was found that the root filling had not reached the apex. After extracting, the apical foramen was filled with gutta-percha, and a band of silver was fitted and cemented around the root, as would be done for a Richmond crown, the band being left long enough to come to the margin of the gum. The tooth was then replanted and the patient instructed to keep her teeth together, and, at night, to tie a bandage around her chin and head. The occluding teeth in this way to assist in keeping the tooth in place. The gums being lacerated considerably in the removal of the root, a crown will not be cemented on until they have healed. The tooth, after being removed, was immediately placed in a saline solution (7½ gr. of salt to the quart of distilled water). In repairing the tooth for replanting, it was held in a vise designed by the clinician for the purpose. Dr. Keefe showed several X-ray pictures of other teeth similarly replanted during the past eight years.

CLINIC NO. 33—"PROSTHETIC TECHNIC EXHIBIT."

DR. GEO. W. JOHNSON, CHICAGO.

Work of the freshmen of the college in prosthetic technics was exhibited by Dr. Johnson, and a very creditable showing made.

CLINIC NO. 34—"EXTRACTING." DR. P. T. DIAMOND, CHICAGO.

The extensive demand of the day upon the college for extractions was partially met by Dr. Diamond.

CLINIC NO. 35—"A DEVICE FOR HOLDING PORCELAIN FACINGS WHILE GRINDING." DR. A. B. ALLEN, CHICAGO.

An effective little appliance designed to prevent facings from getting in the corner behind the operating cabinet when being ground was exhibited by Dr. Allen.

CLINIC NO. 36—"A NEW APPARATUS FOR ADMINISTRATION OF GAS."

DR. W. A. HECKARD, INDIANAPOLIS.

Dr. Heckard exhibited an apparatus of his own invention for the administration of nitrous oxide gas.

CLINIC NO 37—"ADMINISTRATION OF LOCAL ANESTHESIA IN EXTRACTING." DR. A. G. FINNEY, BALTIMORE.

"Eureka" solution was used by Dr. Finney with excellent effects.

CLINIC NO. 38—"PORCELAIN FACED POSTERIOR DUMMIES." DR. J. S. BRIDGES, CHICAGO.

The clinic of Dr. Bridges demonstrated a method of supplementing the support which the pins afford facings, by carrying the backing into a groove cut in the occlusal edge.

ALUMNI CLINIC OF THE UNIVERSITY OF BUFFALO.

Reported by H. L. Belcher, D. D. S.

The annual clinic of the Alumni Association of the University of Buffalo, department of dentistry, was held in the college building on Thursday and Friday, January 24 and 25, 1901. Speaking in a general way, the meeting was a grand success. We were especially favored in having with us a number of the profession's most prominent men. We appreciate keenly the valuable points and suggestions we received from them.

On the first day Dr. E. C. Kirk, of Philadelphia, opened the meeting with a few impromptu remarks, which were weighted with good advice to young practitioners and students. He referred to the ambition which all have in getting the greatest joy and pleasure out of life. His theme was well chosen and was of inestimable value. We only regret that so few heard it and that there was no stenographer present to get it verbatim.

Dr. L. E. Custer, of Dayton, O., spoke at some length on the evolution of electricity as applied to dental science. He described the various appliances, both old and new. Later he demonstrated the Custer electric furnace, which is designed for porcelain inlay, crown, bridge and continuous gum work. Dr. Custer was asked "What precautions one should use in manipulating the furnace." He said: "Simply use it for the purpose for which it is designed, and *not* for experimental purposes, such as fusing metal, etc." He is decidedly opposed to students working with the furnace; they invariably experiment, turn on the full current just to see how much it will stand, and possibly, see it burst. The Custer electric gold annealer was also displayed. Dr. Custer's demonstrations were of practical value and we are greatly indebted to him.

Dr. V. H. Jackson spoke on his original apparatus used in orthodontia. He exhibited the various charts which portray his methods for different parts of the mouth. Dr. Jackson is a clear and concise speaker, and he was given marked attention. The next day he gave a practical clinic in wire bending and in soldering the appliances. It is needless to go into details as to the merits of the "Jackson system," as they are well known and are being used extensively by the profession.

On Friday morning in the perfectly appointed clinic room at the general hospital, Dr. Truman W. Brophy, of Chicago, performed an operation for cleft palate, before 200 interested spectators. The subject was a boy, seven years old, with a congenital cleft of both hard and soft palate, the space between the plates of bone readily accommodating the breadth of the index finger. The operator proceeded, as is his usual custom, to detach the periosteal tissue from the surfaces of the maxillary bones, and by encroaching upon the tonsilar tissue was enabled to lengthen the hard palate materially, and bring the soft parts into direct apposition, retaining them by means of his lead plates and wire sutures. It was one of Dr. Brophy's most successful operations, and a very recent examination of the case showed great advancement, and the plates are rapidly closing up, the plates and sutures being removed in less than two weeks after operation.

On Friday afternoon Dr. W. E. Griswold, of Denver, gave an interesting and instructive talk on "Removable Bridge Work." The doctor demonstrated the practical value of this system with the aid of diagrams and models of the various specimens, which were highly appreciated. I will mention the main points brought out by Dr. Griswold: 1. The bridge is removable by the patient. 2. It restores the contour of the soft tissues. 3. Can be made entirely of porcelain or vulcanite or a combination of the two. 4. Does away with all undercuts of lingual surfaces, and furthermore does away with the show of gold. 5. It is held by a spring stud made of special metal of Dr. Griswold's discovery and manufacture. This special metal he told us would stand the flow of twenty-two karat solder, and still remain highly elastic. In speaking of this metal later, he said it would stand boiling in nitric, HCl and H_2SO_4 acids.

Removable bridge work, as Dr. Griswold portrayed it, is very simple in construction. It adds two parts to our present system. These parts are all made with dies and the operator puts them together.

Dr. A. W. Harlan, of Chicago, next spoke on the method of pulp digestion. Dr. Harlan has been experimenting for the past two or three years, and has given the profession something definite on the subject of pulp digestion, which is attracting much attention. An excellent article will be found in the December (1900) number of the *Cosmos*, page 1272, DENTAL REVIEW, January, 1901, page 52.

Dr. Harlan exhibited a specimen of Kowarska's paste for retaining loose teeth in position and covering the sensitive necks of teeth. This paste is composed of celluloid 155 grs. and acetone 500 grs.

Dr. Robert Good, of Chicago, was watched with much interest in treating a case of pyorrhea. We were impressed with the thoroughness of the treatment. Dr. Good's procedure is to first flood the pocket with a solution of cocaine (ten to fifteen per cent). This is accomplished with a needle having a long stem and a blunt point. The next step is to thoroughly remove all deposits with instruments kept in a solution of sulphonaphthol while operating. In removing the deposits, Dr. Good's instructions are to "scrape thoroughly and positively, *not* caressingly." Dr. Younger's set of instruments were used, and seemed admirably adapted. After the deposits are removed, the entire pocket is flooded with warm lactic acid, chemically pure. The object being to destroy the surface of the old pocket, so that nature may restore the lost tissue. During the operation the patient frequently rinsed the mouth with an antiseptic solution. Dr. Good is positive pyorrhea may be cured. However, it requires a great deal of perseverance, patience and hard work, and is one of the most difficult conditions to handle.

Dr. H. A. Pullen, of Buffalo, gave a clinic on "orthodontia soldering clamps," which are original with him. The clamps are three inches in length, and are made from eighteen gauge steel wire, specially tempered to allow bending after heating, if necessary. They differ from the ordinary soldering clamp in that they are delicate, strong and durable. They hold, automatically, in position, the parts of the appliance while being soldered, thus leaving one hand entirely free. The small size of the wire used in their construction minimizes the amount of heat necessary in soldering, which, practically, overcomes all liability of burning the appliance. The most ingenious of the set will hold a pinhead in exact apposition with the McGill band while it is being soldered thereto. It would seem that Dr. Pullen's soldering clamps would be of great value as timesavers, and that the technic of orthodontia may be exceedingly simplified by their use.

A banquet was given to our guests and members of the Alumni on Friday evening at the Hotel Genesee after which all repaired to the college building where one of the most interesting parts of the proceedings took place.

Dr. James McManus, of Hartford, Conn., who has done more than any other one man in writing the history of dentistry, presented to the college, through Dr. W. C. Barrett, the framed and mounted picture of Chapin A. Harris, whom the world knows as the first to establish an institution of dental learning. Also a framed and mounted picture of Horace Wells, the discoverer of anesthesia. Dr. McManus read a paper of rare excellence on the life of Horace Wells—his being the greatest of all discoveries —"anesthesia."

In conclusion we wish to state that we owe the success of our meeting largely to the hard work and untiring efforts of Dr. W. C. Barrett, and Dr. J. W. Beach, of Buffalo.

A clinic upon anesthesia with nitrous oxide and oxygen was given by Dr. H. B. Huver, for an operation upon a necrotic tibia. Prof. Roswell Park spoke very highly of its use in numerous other cases. The patient became greatly excited at the applause given to the alumni guests as they entered the clinic, and physical restraint was necessary to prevent the semiconscious patient from getting from the table.

The oxygen was turned off and pure nitrous oxide given to hasten anesthesia. Throughout the operation, which lasted about ten minutes, the patient would regain consciousness, when the slightest amount of oxygen was turned in so that the clinic was in fact a demonstration of prolonged and intermittent nitrous oxide anesthesia. The loud snoring and deep cyanosis produced by this gas alone was very pronounced whereas with the combined gases it is not present.

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PRESENTATION OF PORTRAITS OF WELLS, HARRIS AND GARRETSON.

At the close of the Alumni Clinic of the Chicago College of Dental Surgery, January 23, 1901, Dr. James McManus, of Hartford, Connecticut, presented the portrait of Horace Wells, the discoverer of anesthesia. Dr. McManus made an address of some length detailing the exact history of the discovery. Dr. A. O. Hunt on behalf of Dr. B. Holly Smith, of Baltimore (who could not be present on account of illness), made the presentation of the portrait of Chapin A. Harris and Dr. T. C. Stellwagen, of Philadelphia, presented the portrait of James E. Garretson. The speakers classed the originals of these portraits as being types and forerunners of the pioneers in anesthesia, dental education and oral surgery. A large audience assembled and the meeting was most auspicious as typifying the respect of those present for the deeds of the illustrious trio whose features will soon become familiar to the student from day to day as he lingers in the lecture room. The platform was covered with teachers and the army was represented by Col. B. J. D. Irwin, and Rush Medical College by Prof. A. D. Bevan. Many of the oldest dentists in Chicago were in the front seats and altogether the meeting was a great success.

THE ARMY REORGANIZATION BILL. THE PRESSURE FOR DENTAL SURGEONS AS THE BILL WAS FINALLY PASSED. THE APPOINTMENT OF EXAMINERS.

Our readers will find below the medical and dental portions of the army bill which has cost so much time and energy on the part of the dental profession. Whether it was worth the enormous sacrifice made by the members of the profession, time alone will tell.

It may be comforting to think that it will be beneficial to the recipients of the attention of the appointees and provide for those unable to pay for such serious governmental care. We do not desire at this time to comment on the act as it is hoped it will lead to better things in the future.

SEC. 18. That the medical department shall consist of one surgeon general with the rank of brigadier general, eight surgeons with the rank of colonel, twelve surgeons with the rank of lieutenant colonel, sixty surgeons with the rank of major, two hundred and forty assistant surgeons with the rank of captain or first lieutenant, the hospital corps, as now authorized by law, and the nurse corps: Provided, that all vacancies in the grades of colonel, lieutenant colonel and major created or caused by this section shall be filled by promotion according to seniority subject to the examination now prescribed by law: And provided, that the period during which any assistant surgeon shall have served as a surgeon or assistant surgeon in the volunteer army during the war with Spain or since shall be counted as a portion of the five years' service required to entitle him to the rank of captain: And provided also, that nothing in this section shall change the relative rank for subsequent promotion of medical officers as arranged by results of competitive examination: Provided further, that in emergencies the surgeon general of the army, with the approval of the secretary of war, may appoint as many contract surgeons as may be necessary, at a compensation not to exceed $150 per month. That on or after the passage of this act the President may appoint for duty in the Philippine Islands, fifty surgeons of volunteers with the rank and pay of major, and one hundred and fifty assistant surgeons of volunteers with the rank and pay of captain, for a period of two years: Provided, that as many of these volunteer medical officers as are not required shall be honorably discharged from the service whenever in the opinion of the secretary of war their services are no longer necessary. Provided, that the surgeon general of the army, with the approval of the secretary of war, be, and he is hereby, authorized to employ dental surgeons to serve the officers and enlisted men of the regular and volunteer army, in the proportion of not to exceed one for every 1,000 of said army, and not exceeding thirty in all. Said dental surgeons shall be employed as contract dental surgeons under the terms and conditions applicable to army contract surgeons, and shall be graduates of standard medical or dental colleges, trained in the several branches of dentistry, of good moral and professional character, and shall pass a satisfactory professional examination: Provided, that three of the number of dental surgeons to be employed shall be first appointed by the surgeon general, with the approval of the secretary of war, with reference to their fitness for assignment, under the direction of the surgeon general, to the special service of conducting the examinations and supervising the operations of the others; and for such special service an extra compensation of sixty dollars a month will be allowed: Provided further, that dental college graduates now employed in the hospital corps who have been detailed for a period of not less than twelve months to render dental service to the army, and who are shown by the reports of their superior officers to have rendered such service satisfactorily may be appointed contract dental surgeons without examination.

The examiners are: J. S. Marshall, M. D., Chicago; Robert T. Oliver, D. D. S., Indianapolis, Ind. The third member not yet appointed.

To our Contributors.

We find ourselves in the position of having a plethora of excellent original matter, which unfortunately has to lie over for a short period until we can find space for it. By exercising a little patience we will soon be able to catch up on some interesting society reports and other valuable reading matter.

Dr. Trueman's Paper.

We invite the attention of the reader to the very excellent paper of Dr. Trueman as being of considerable historical interest and well worth the time spent in its study and consideration.

DOMESTIC CORRESPONDENCE.

Letter From New York.

To the Editor of the Dental Review.

Dear Sir:—The first dental meeting of the twentieth century, that of the Institute of Stomatology, was held at the office of Dr. Robert H. M. Dawbarn, 105 West Seventy-fourth Street, Friday evening, January 4, the new President, Dr. J. Morgan Howe, in the chair.

Under communication on "Theory and Practice," Dr. A. H. Brockway described his method of easily removing amalgam fillings by applying a heated copper point to the filling just previous to drilling it out.

Dr. Kimball showed a very clever instrument to hold a stick or a paste polisher. The particular points were the firmness with which the wood is held and the ease of adjustment, being able to open and lock it with *one* hand.

Dr. F. Milton Smith spoke of his success in removing pulps by using cocaine after the method described by Dr. J. B. Locherty, in a recent paper read before the Institute; said he did not use arsenic any more. Dr. H. W. Gillette, of Newport, R. I., also spoke of his success in this method of pulp removal. Dr. Smith having spoken of his being the first to so use it, Dr. Gillette disclaimed the honor, saying it belonged to Dr. Edward C. Briggs, of Boston, Mass.

Dr. E. A. Bogue was to give a report upon the Paris Congress, alluding especially to Dr. Brophy's early operation for congenital cleft palate, Mr. William's easy method of manufacturing articial vela for adult cleft palate cases, Dr. Michael's paper on diagnostic indications discoverable in saliva, and Dr. William Davenport's modification of crown and bridge work, tending to make both more durable and less destructive to adjacent parts. As he was confined to his room with a severe attack of grip, his paper was read by Dr. F. Milton Smith. As these things have all been commented on already no detailed report of the discussion is necessary.

Dr. Dawbarn, who started as a dentist and has become a very skillful surgeon, holding an honored position among New York's leading men, complimented Dr. Brophy upon his operations and lamented the fact that in all the cases coming to his knowledge where he would liked to have performed the operation the parents objected.

The report on Dr. Michael's paper was discussed a little, but the greater portion of discussion centered on Dr. Davenport's modification of crown and bridge work. The question of bridges anchored at only one end was to the fore, and much difference of opinion was expressed.

Dr. Chas. F. Allan, of Newburg, spoke of using gutta-percha under saddles when it would not show, claiming that after eleven years of such use he had seen no ill results nor abnormal conditions.

When the meeting adjourned it was to partake of the hospitality of Dr. Dawbarn. He is one of the few honorary members of the Institute. He has taken great interest in oral surgery and is a valuable member of the society. In fact he is *much* in demand, for at the clinic which preceded in the afternoon of January 8, the first meeting of the year of the First District Dental

Society, of New York State. Dr. Dawbarn made special preparations for the dentists.

He invited them to the operating room of the Polyclinic Hospital (where he is attending surgeon) to witness an operation in facial surgery consisting of the complete excision of the external carotids with all its branches so as to starve a cancer of the tonsils No veins were ligated. The operation consumed about half an hour and was fascinating. Dr. Dawbarn has the rare gift of being able to operate and talk about the minutiæ and details of and answer questions relative to the operation at the same time.

The operation was a success and we were promised a view of the patient at some future time. The age of the patient was fifty-eight.

No oozing of blood occurred after washing the wound with peroxide of hydrogen. The doctor explained that if there was any he would not proceed to sew the same because the cut surfaces would not unite so kindly and that suppuration might be expected.

Dr. Dawbarn said he was once a dentist under the tuition of Dr. Cook of Brooklyn. Another case he had to present to us, was a gentleman who had lost his nose completely through syphilis so that where the organ once existed a depression was, before operating. Now quite a respectable nose has been erected. One would never know that the organ had been missing for some time for exteriorly there is nothing to indicate that an artificial appendage has been substituted. There is not even a scar.

The doctor describing his procedure in such cases said that he first molds in wax, adjusting to the face as he progresses, a model of such a nose as will conform to the features. He subsequently manufactures of gutta-percha in molds, an exact counterpart of this wax.

This material (gutta-percha) he believes to be the least irritating of all substances available for the purpose.

He then proceeds to prepare the patient's face for the reception of the new article by dissecting the *skin* only from the underlying tissues, starting inside the nose (so as to make no external scar and to require no stitching, which really is the beauty of the operation) and lifting the skin from both sides well out onto the cheek and as high as the brow. Then through the nostril he slips the gutta-percha nose and adjusts it to place. The same is prevented from moving by the application of bandages about the head. The surrounding tissues take very kindly to the new member. It certainly makes a wonderfully pleasing appearance.

Dr. M. D. Lederman performed an operation in the presence of the dentists assembled; that of removing adenoids from the pharynx.

In the evening, at the Academy of Medicine, the Society met to listen to the informal talk of Dr. M. H. Cryer, of Philadelphia, on "Some of the Variations in the Anatomy of the Face," with lantern illustrations, which was excellent. The slides were fine and perfect. He laid very much stress upon a rudimentary fourth molar, which is sometimes present in some individuals; when so, always in the upper, never in the lower jaw.

He also made the assertion that there has been no deterioration in teeth of human beings during the past 2,000 years.

After the meeting all adjourned to partake of a collation which was served.

The New York Odontological Society's thirty-fourth anniversary took place at the Academy of Medicine, 17 West 43d Street, on Tuesday, January 15, at 2 and 8 o'clock P. M. At the afternoon session, Dr. Joseph Head, of Philadelphia, gave a clinic, showing the recent advances in his methods of inserting porcelain inlays. A discussion followed the clinic in which Dr. Head referred again to the subject presented before this society last year—"Shadow Problems." They were always difficult to foresee. He still uses platinum foil $\frac{1}{1000}$ in., which he believes to be better than gold and makes a more perfect matrix. He admonishes those making matrices to go cautiously and intelligently after just compressing platinum into cavity as deep as it will go comfortably without force. Start at the edges to burnish and gradually cause your burnisher to describe a smaller circle until it reaches the center, then begin over again at edges; never work outward toward edges, for you immediately spoil matrix stretching it so that the margins project higher than the cavity, necessitating subsequent grinding; also impairs fit.

He considers the open muffler (new) furnaces far superior to the Custer style.' Timme furnace very good and has some good features. The Hammond cheapest and possibly best.

Dr. A. W. Harlan, of Chicago, was present also and described the uses of papain in the digestion of the pulps of teeth.

He said the remedy would cause pulp digestion of dead tissue or almost thoroughly devitalized tissue no matter what medicines have previously been used. Stress was laid on the fact that papain has no effect on the living pulp, to digest it.

Papain, glycerine and hydrochloric acid ($\frac{1}{50}$ to $\frac{1}{300}$) was used, equal parts. It required about two weeks to perform its work. No pain is experienced; no·putrefaction ensues.

It is valuable also after removing deposits from pyorrheal pockets. Pack the paste in them and one may be sure it will digest all blood clots, etc., and will not discolor the tooth.

Dr. Hinkins, of Chicago, demonstrated the use of Kowarska's cement for holding loosened teeth in position. This procedure is to ligate the teeth together not in the figure of eight style but by tying the silk about the tooth and making several knots with silk, enough to fill nearly the interdental space then encircling the next tooth and tying knots again in interdental space, etc., until the teeth are secured and then with this cement which is made of celluloid C. P. and acetone C. P. dissolved together to make thick creamy mass, holds the parts firmly together. Apply the cement, about twice as thick as it seems it should be, for the shrinkage is so great that it remains as a film only if applied lightly.

Dr. W. E. Griswold, of Denver, Colo., followed with charts describing his system of removable bridge work. He also had a number of models to practically show its application.

The root is prepared and an attachment similar to the spring clasp of the well known glove fastener is secured to its end and of course corresponding receptacle in the crown which is to receive the fastener.

It seemed a very practicable application of the principle and met with pleasing comments from all who saw it. Special instruments are required to manufacture the springs.

Dr. Walker, who, by the way, was elected in December as president of the Odontological to succeed himself, presided at the evening meeting of the society as he did at the afternoon session.

Dr. Truman W. Brophy, of Chicago, read a paper on "The Surgical Treatment of Cleft Palate," illustrated by the use of the stereopticon, which was somewhat on the lines of his paper at Niagara Falls a year and a half ago, but brought up to date. It was a plea for the surgical treatment of cleft palate by the new process of passing wires through the jaws above the hard palate and drawing the cleft together after knifing them, of course securing the end of wire so as to hold in the assumed position.

These operations are done as a rule about ten days after birth, if possible.

During the past few years he has operated on 221 cases under six months of age.

The Doctor told us that not one case of nasal stenosis occurred.

He closed by paying high tribute to some of our dental surgeons of high repute, particularly of Garretson, whose photo he had projected on the screen.

Dr. Harlan contributed some excellent historical facts relative to the history of cleft palate. He stated that he had gone into the subject deeply some years ago, and cited authors of the misty past and the names of surgeons of the same age (about the fourteenth century) with such familiarity that some felt that he would be called upon some day to tell us all he knew about the subject. Dr. Stearns, he told us, was about the first to perfect speech. He protected his own palate by an obturator. Later on Kingsley gave his wonderful results to the profession.

Dr. Kingsley had been called upon to open the discussion of Dr. Brophy's paper.

He said that Dr. Brophy had removed the opprobrium of surgery. Among much else that was well said of Dr. B., Dr. Kingsley conceded that he was inclined to concede that in this day surgery might be practiced on the very young with some success.

Dr. Barrett, of Buffalo, and Dr. Fanueil D. Weisse, the latter of the N. Y. C. D., both lauded Dr. Brophy, as did Dr. L. D. Shepard, of Boston. Dr. Ottolengui said that he agreed and disagreed with the essayist. He was a skeptic, now a convert. Before he had seen Dr. Brophy's patients at Niagara Falls he disbelieved.

After the closing of the discussion of his paper Dr. Brophy and those assembled adjourned to a collation which had been prepared.

The last meeting of the Central Dental Association of Northern New Jersey was held at the usual place, 943 Broad St., Newark, N. J., January 21. There were over ninety at the usual fine spread which this society enjoys at the dinner hour. Very rarely do so many put in an appearance except at the "Annual." During the dinner music is always furnished. This evening one of the musicians sang to his own accompaniment "The Palms," and later when the trio played "America" the diners all rose to their feet.

The paper of the evening was by James G. Palmer, of New York, on "Is the Dental Pulp Necessary in Adult Life?" He said that it probably was not absolutely necessary, but seems to think it much the better plan to retain it instead of ruthlessly destroying it. The Doctor described cases of pyorrhea alveolaris and sensitive teeth with receded gums where he thought it might be advantageous to devitalize. He claimed there was no *set* period in adult life when the pulp could positively be dispensed with. He spoke of the difficulties in absolutely cleansing root canals, discoloration and other ill results as more than offsetting any gain possible. Drs. Meyer, L. Rhein and John I. Hart, of New York, and Prof. I. Norman Broomell, of Philadelphia, were present and participated in the discussion. Prof. R. R. Andrews, of Cambridge, Mass., Drs. C. L. Hungerford, of Kansas City, Mo., G. V. Black, of Chicago, Ill., J. Leon Williams, of London, England, S. G. Perry, of New York, E. A. Bogue, of New York, sent written contributions. Drs. R. Ottolengui, C. S. Stockton, R. M. Sanger and others participated and the discussion went on well to the large hours of the night.

Prof. Broomell claims that the period when such pulp removal could safely be done was readily determined. Dr. Rhein and Dr. Hungerford claim Dr. Palmer as a recruit to their side in favor of removing the pulp under many circumstances, Dr. Rhein claiming that Dr. Palmer was even more radical than he.

Dr. Hart was opposed to frequent and almost indiscriminate removal of the pulp so were others. Perhaps the diversity of opinions were evenly divided. It is safe to say, though, that the majority of practitioners of my acquaintance in our metropolitan district are conservatives, even a trifle more than Dr. Palmer believes himself to be.

If they believe theoretically that the removal of pulps in many instances is good practice, they have not the courage to practically follow such theorizing because they are wont to depart from the straight (?) and narrow path of conservatism.

The February meeting of the Institute of Stomatology was held in Dr. J. Morgan Howe's new residence and office, 12 West Forty-sixth Street, Tuesday evening, the 5th inst. There was a goodly gathering, and after inspecting the new office and appliances the meeting was called to order, with the President, Dr. Howe, in the chair.

Under communications on theory and practice, Dr. E. H. Raymond spoke of the benefit he had obtained from the use of suprarenal capsules in dental operations. Both constitutional and local benefit was obtained. As a styptic it completely subdues bleeding in an exceedingly short time. Where the tissue between the teeth is very spongy, around loose roots or teeth, he simply touches the soft parts with the suprarenal powder and instantly checks bleeding. The great advantage it has over mineral styptics is that there is no soreness produced, nor is there any odor, and it is absolutely harmless.

In answer to questions by various gentlemen, Dr. Raymond said it would control the tendency to bleeding on brushing; that it could be used when extraction had occurred and so control the hemorrhage that gold fillings could be at once inserted in adjoining teeth after applying dam, and would not need pressure for arterial hemorrhage, as the small vessels are contracted strongly, and is *always* efficient.

In answer to further questions, he described the case of a dental student who had severe hemorrhage of the nose which was *not* controlled by anything until the suprarenal powder was snuffed into the nostrils, when it *instantly* ceased.

Dr. Wheeler, of Worcester, Mass., corroborated Dr. Raymond's statements, speaking of a case of nosebleed under his own notice where the results were marvelous. He thinks it arrests hemorrhage by contracting the arteries or arterioles.

Dr. R. W. Hunter, of Greenfield, Mass., read a short paper describing "A Few Cases of Replantation." This was a report of a few cases of his own practice where he had been unable to cure abscesses by ordinary methods of treatment, when he resorted to extraction, cutting off a small portion of the end of root, cleaning, refilling and replanting. He spoke of it, however, only as a last resort. His success had been very good.

In answer to a question by Dr. A. H. Brockway he described the method he had adopted of retaining the teeth, which was an oblong piece of rubber dam, about the width of the tooth, and long enough to reach nearly to the gum margin on the lingual and labial aspects of the tooth. Four holes in the corners, and floss silk passed through these holes and tied to the adjacent teeth, making a sort of flexible bandage.

Dr. S. E. Davenport complimented Dr. Hunter on his honesty in admitting that he *had* perforated a root. Usually it "was the other fellow." He explained this honesty on the ground that Dr. Hunter come from Massachusetts!!! He was glad to hear the Doctor say it should only be resorted to as a last expedient; spoke of it as a sort of lottery; queried whether the ligature described did not have a tendency to make the tooth shorter; Dr. Hunter answered in the negative. Answering other questions by various gentlemen, Dr. Hunter said he did not remove any of the socket even in cases of chronic abscess. He said the cause of irritation being adherent to the root, when that was removed by cutting off the end of the root, nature would do the rest.

He finishes the end of the root after cutting and filling, by polishing with sandpaper and cuttle fish disks; does not advocate replantation in Riggs' disease because of loss of alveolus, nor would he replant when absorption had begun unless the gums were healthy.

The discussion here branched out upon Riggs' disease. After Dr. Howe spoke of replantation as being a useful expedient as a last resort, especially when elongation had been caused.

Dr. C. O. Kimball wished to know the degree of success attained when teeth were loose, in so replanting. Dr. H. W. Gillette wanted to know whether there was any recurrence of the trouble with the replanted teeth and suggested for such work the thorough sterilizing of operating room as well as instruments, just as a surgeon does for an operation.

Dr. C. D. Cook spoke of the tendency of Riggs' disease to attack adjacent teeth, saying "there are others."

Dr. Frederick L. Bogue, of New York, then read a paper on "The Relative Effect of a Common Environment upon Enamel from Different Teeth." The paper was short but concise and thorough. Dr. Bogue combated Drs. Black and Williams' theories that environment was the sole cause. He questioned why Dr. Black had confined his experiments to dentine. He described how he had placed a large number of teeth in a mixture of bread and saliva and subjected them to continual low degree of temperature for two months attempting to obtain somewhat the same conditions as in the mouth. The teeth were covered with wax and a circular piece cut out of the wax, over a sound portion of enamel—and some of these teeth mounted were passed around showing very clearly marked difference in the amount of decay. He had also cut squares of enamel, ground them to the same weight, subjected them to the action of the bread and saliva and then weighed to discover what difference might occur. It was found that there was a wide range of difference in weight, some being almost the same as when subjected to the bath and some being several milligrammes different in weight, from what they were when first weighed. Dr. Geo. S. Allen in discussion after complimenting Dr. Bogue and wishing there was more of the paper spoke of the results of Dr. Black's work as being similar to the Scotch verdict "not proven" mainly because it did not go into detail. Dr. J. Bond Littig spoke of the time when natural teeth were mounted on dentures instead of artificial teeth and said that in actual use some of these teeth would wear out sooner than others in the same mouth, i. e., same common environment.

Dr. S. E. Davenport, while complimenting the essayist on his results, said "Theorizing does not compare with the actual results of investigation;" thought it strange Dr. Black had not included enamel in his investigations.

Dr. J. Morgan Howe said he had been interested during the past year in observing Dr. Bogue's experiments and noting the different results from what Drs. Black and Williams reported, said it puts the matter still in the position of being an "open question." As specialists in medicine we should seek some medium to influence oral fluids.

Dr. C. O. Kimball wished to know if there was any relation between the varieties of the decay, and recognized differentia in enamel; whether there was any correspondence in degree of decay.

Dr. E. A. Bogue, the father of the essayist, being detained by illness, his remarks were read by Dr. F. Milton Smith. He wished to emphasize the "fact that a clean tooth never decays."

Dr. Geo. S. Allan objected to this statement as being too sweeping an assertion.

Dr. J. M. Howe called attention to the fact that Dr. Black in

December number *Cosmos*, 1900, makes almost same statement. Dr. Howe said that portion of a tooth which has friction, as the occlusal surfaces does not decay, while when there is no friction decay is liable to occur.

Dr. F. L. Bogue, the essayist, then closed the discussion after which the usual hospitality of the host was enjoyed.

"THE BOROUGHS."

REVIEWS AND ABSTRACTS.

DENTAL ACT OF NEW SOUTH WALES.

ACT NO. 45, 1900.

An act to provide for the registration of dentists qualified to practice in New south Wales. [Assented to, 5th November, 1900.]

Be it enacted by the Queen's Most Excellent Majesty, by and with the advice and consent of the Legislative Council and Legislative Assembly of New South Wales in Parliament assembled, and by the authority of the same, as follows:

1. *Short title*. This act may be cited as the "Dentists Act."

2. *Interpretation*. In the construction of this act, unless the context otherwise indicates, the following terms shall have the respective meanings hereby assigned to them, that is to say:

(1) "Dental board" or "board"—The dental board appointed under the provisions of this act.

(2) "Dentist"—A person registered as a dentist under this act.

(3) "Prescribed"—Prescribed by this Act or by any regulation made thereunder.

3. *Constitution of dental board*. As soon as may be after the commencement of this act the governor-in-council shall appoint two duly qualified medical practitioners and four dentists, qualified for registration hereunder, and two persons not being either medical practitioners or dentists, to be members of the dental board of New South Wales, and shall also appoint one of such members to be president thereof. All such appointments shall be for a period of three years.

4. *Filling vacancy in first board*. If any vacancy occur in the office of member of the dental board during the period for which the first members of said board are appointed, the governor-in-

council may fill such vacancy, and the person so appointed shall hold office until the expiration of three years from the date of the appointment of the first members, and no longer.

5. *Subsequent boards to be elected.* On the expiration of the period for which the fist dental board shall have been appointed to hold office, four dentists and two medical practitioners shall be eligible for election by the registered members under the dental board for periods of three years, and two lay members of the board shall be appointed by the governor-in-council for periods of three years.

6. *Officers.* The board may from time to time appoint a registrar and such other officers as it may think fit for the purpurposes of this act.

7. *Register.* The registrar shall enter into a register, in the prescribed manner and on payment of the prescribed fee, the full names and addresses, date, and description of qualifications for which registration is granted, and all other prescribed particulars of all dentists, and shall transmit in the month of January in each year a certified copy of such register to the colonial secretary, who shall cause the same thereupon to be published in the Government Gazette; a copy of such Gazette shall be prima facie evidence, in all legal proceedings, that the persons mentioned therein are registered according to the provisions of this act, and the omission of any name therefrom shall be prima facie evidence that such person is not so registered.

8. *Removal of names of deceased dentists.* The board shall cause to be removed from the register the names of deceased dentists.

9. *Refusal to place names on and removal from register.* The board may refuse to register as a dentist, or may remove from the register, any person who—

(*a*) has been convicted of a felony or misdemeanor, or of any offense which, if committed within this colony, would be a felony or misdemeanor; or

(*b*) has been guilty of infamous conduct in any professional respect:

Provided, that in the case of a charge of infamous conduct as aforesaid the board shall make due inquiry, sitting as an open court, and the person charged shall be afforded an opportunity of defense, either in person or by counsel, and shall have the right of appeal to the supreme court and such appeal shall be in the nature of a rehearing:

Provided, further, that any such person shall not be refused registration nor have his name removed from the register on account of a conviction for an offense which, though within the provisions of this section, does not, either from the trivial nature of the offense or from the circumstances under which it was committed, disqualify a person from practicing dentistry, nor until he has been called on to explain any objection raised against him.

10. *Restoration of name removed.* Where the board directs the removal from the register of the name of any person, the name of that person shall not be again entered on the register, except by direction of the board, or by order of a court of competent jurisdiction. The court may, if it thinks fit in any case, direct the registrar to restore to the register any name removed therefrom without fee, or on payment of such fee, not exceeding the registration fee, as the board may from time to time direct, and the registrar shall restore the same accordingly.

11. *Qualification necessary for registration.* Any person who—

(*a*) Holds some recognized certificate as hereinafter defined, and who proves to the satisfaction of the board that he is of good character;

(*b*) Has for a period of two years before the commencement of this act been *bona fide* engaged in New South Wales in the practice of dentistry, either separately or in conjunction with the practice of medicine, surgery, or pharmacy, and who has made application for registration to the board within one year from the commencement of this act; or

(*c*) Has attained the age of twenty-one years and has been engaged during a period of not less than four years in the acquirement of professional knowledge in dentistry, and has passed an examination before the board according to the prescribed regulations; or

(*d*) Has attained the age of twenty-one years, and shall have been a pupil or apprentice for a period of not less than two years to a dental practitioner entitled to be registered under this act; Provided, that such pupilage or apprenticeship shall have been commenced at least six months before the commencement of this act, and shall have expired before he shall be entitled to be so registered; or

(*e*) Has obtained a diploma or degree in dentistry from a university in Australia;

shall be entitled to be registered as a dentist under this act.

12. *Registration of dentists with recognized certificate.* Any person who has practiced dentistry for not less than twelve months elsewhere than in New South Wales, and who holds some recognized certificate as hereinafter defined, and who proves to the satisfaction of the board that he is of good character, shall be entitled upon the payment of the prescribed registration fees and without examination, to be registered as a dentist under this act.

Recognized certificates of dentists. The term "recognized certificate" means a certificate, diploma, membership, degree, license, letters, testimonial, or other title, status, or document granted by some university, college, or other public institution in a British possession or foreign country, and which is recognized by the board as entitling the holder thereof to practice dentistry in such possession or country, and as furnishing sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of dentisty.

13. *Unregistered persons not to assume name dentists, etc.* From and after the first day of January, one thousand nine hundred and one, no person other than a duly qualified medical practitioner shall be entitled to take or use the name or title of "dentist," or of "dental practitioner," or of "dental surgeon," or any name, initials, title, addition, or description implying that he is registered under this act, unless he is registered hereunder. And any person who after the first day of January, one thousand nine hundred and one, not being a duly qualified medical practitioner or a dentist so registered, takes or uses any such name, initials, title, addition, or description as aforesaid, shall be liable on conviction to a penalty not exceeding twenty pounds.

14. *Copy of register to be evidence.* A copy of the register kept in pursuance of this act, signed by the president of the dental board, shall, in any proceedings under this act, be prima facie evidence that the persons whose names are therein contained and no others were, up to and including the time when the said copy of the register was so signed, legally qualified dentists.

15. *Regulations.* The board may, with the approval of the governor, make, alter and repeal regulations for carrying this act into full effect, for the nomination and election of members of the board (after the first nominated board), and for regulating the proceedings of the board, fixing quorums, the removal of members of the board, regulating the duties of its officers, prescribing what certificates, diplomas, membership, degrees, licenses, letters, testimonials, or other titles, status, or documents will be recognized by the board under section twelve, and for holding examinations and prescribing the subjects and fees therefor. All such regulations shall, upon being published in the Government Gazette be good and valid in law, provided that a copy of all such regulations be laid before both houses of parliament within fourteen days from publication thereof, if parliament be then in session, or otherwise within fourteen days after the commencement of the next ensuing session.

16. *Penalties for falsification of register or other frauds on the act.* Any registrar or other person who wilfully makes or causes to be made any false entry in or falsfication of the register, and any person who wilfully procures or attempts to procure himself or any other person to be registered under this act by making or producing, or causing to be made or produced, any false or fraudulent representation or declaration, either verbally or in writing, and any person aiding or assisting therein, shall be guilty of a misdemeanor, and shall on conviction be liable to be imprisoned, with or without hard labor, for any term not exceeding twelve months.

17. *Power to examine witnesses.* The board may examine any person upon oath, or take a solemn declaration from any person for the purposes of this Act; and if any person wilfully makes any false statement upon such examination or in such declaration, or utters or attempts to utter or put off as true before the board any false, forged, or counterfeit certificate, diploma, license, letter, testimonial, or other document or writing, he shall be guilty of a misdemeanor, and shall, on conviction, be liable to be imprisoned for any period not exceeding twelve months.

18. *Offenses and penalties.* All informations for offenses against this Act shall be laid by the registrar, or some other person appointed by the board for that purpose, and all penalties when recovered shall be paid to the dental board for the purposes

of this Act. All such penalties may be recovered before any stipendiary or police magistrate or two justices of the peace sitting in petty session.

19. *Fees.* The fees mentioned in the Schedule to this Act shall be payable by persons applying to be registered, or obtaining certificates of registration under this Act, or inspecting the register respectively, to the registrar, and shall be applied by the board in defraying the expenses and carrying out the provisions of this Act.

MEMORANDA.

Dr. C. R. Taylor, of Streator, visited the Chicago clinic.

Dr. Robert Good spent ten days in New York during January.

Dr. Henry Barnes, of Cleveland, Ohio, visited Chicago in January.

Dr. L. P. Leonard, of Waseca, Minn., visited Chicago in February.

Drs. Maercklein and Carmichael, of Milwaukee, attended the clinic.

Dr. W. W. Shryock, of Fort Wayne, Ind., visited the Chicago Clinic.

Dr. J. S. Burnett, of Salto, Uruguay, S. A., was in Chicago in January.

Dr. H. B. Tileston, of Louisville, took in the Alumni Clinic in Chicago.

Dr. E. C. Kirk, of Philadelphia, spent a few days in Chicago early in February.

Dr. W. A. Heckard, of Indianapolis, was one of the clinicians at the Alumni Clinic.

Some men never do things by halves. They go out to get a tooth filled and come back full all over.

Drs. James McManus and Chas. McManus, of Hartford, Conn., attended the Chicago Alumni Clinic.

Dr. J. E. Hinkins is experimenting with Kowarska cement for holding loose teeth firmly in position.

Dr. H. Benedict, of Detroit, Michigan, one of the oldest practitioners in the State, died January 15 in Chicago.

The Odontographic Society of Chicago held its annual dinner January 21. The new president, Dr. L. S. Tenney, was inducted into office.

Dr. Geo. M. Gould is out of the editorial business at present, but is soon likely to take up the labors once more with a new medical journal.

Dr. J. F. Dowsley, of Boston, paid a flying visit to Chicago in February, visiting the dental colleges. Dr. Dowsley is a member of the Massachusetts Examining Board.

Dr. H. J. Goslee has been appointed dental surgeon to the Cook County Hospital. This is a well merited appointment as Dr. Goslee is in every way fitted for the position.

Dr. A. E. Webster, of Toronto, will edit the *Dominion Dental Journal*, succeeding the late Dr. W. Geo. Beers. Dr. Webster is well qualified to do such work, as he has already had a valuable experience.

NOTICE.

We will pay twenty-five cents each for clean copies of the January, 1900, issue of the DENTAL REVIEW. Send them direct to the office with the address of the sender.

Dr. J. S. Burnett gave a dinner on Tuesday evening, January 29, to Drs. Brophy, Harlan, Hunt, Hinkins, C. N. Johnson, L. S. Tenney, Good, Griswold, Royce and Davis, as a sort of farewell to his leaving for South America. He sails February 23.

NOTICE.

Those wishing to secure a copy of the Transactions of the International Dental Congress can do so by forwarding $7.20 to A. W. Harlan and he will ensure the safe delivery of same after publication.

The annual clinic of the Alumni Association of Northwestern University Dental School will be held on February 22, 1901, at the college building, corner Madison and Franklin Streets.

G. B. MACFARLANE, *Secretary.*
A. V. HARGETT, *President.*

Dr. H. A. Cross writes as follows:

CHICAGO, Jan. 15, 1901.

To the Editor: The May 1900 number of the DENTAL REVIEW, pages 364, 365 and 366, contains an account of a case I had been dealing with, and I wish to state that the German professor referred to took a vacation trip to Germany soon after I had completed the treatments and work upon that case. Being gone several months he has recently returned to Chicago, and reports that he has not had any disturbance whatever with that tooth since I finished its treatment.

PAPAIN PASTE.

A great many notes have been addressed to the writer about papain paste. At present I am unable to state whether the paste will remain unchanged or not—specimens I have in my possession are unchanged after two months. There is no reason for supposing that deterioration will take place, although the water in the hydrochloric acid may evaporate and leave it somewhat dry. In regard to the use of the paste: Take out as much of the pulp as possible and digest the remainder with the paste. Pack this directly into the pulp chamber and cover it with a little paper fiber lint, and seal the cavity with oxyphosphate or oxysulphate of zinc. This is better than gutta-percha, as the use of much oil is not favorable to pulp digestion (I suppose that oil is always used when gutta-percha is used). Leave the paste in the tooth two weeks or longer (three is better). Always open the cavity after adjusting the rubber dam. Do not be in a hurry. Wash the contents of the root canal with peroxide or pyrozone and if any portion of the pulp is undigested you can remove it easily with the points of the pliers or a broach with one or two barbs on it. Fill the root at once.

REMOVABLE BRIDGE WORK.

The attention of our readers is called to a new system of removable bridge work, invented by Dr. W. E. Griswold, of Denver, Col. As far as we can judge by the samples shown, it is perfectly secure when in place, yet easily removed by the wearer, easy of construction, with the special tools and appliances used with it, and it not only restores the teeth but the original contour of the soft tissues. It can be made entirely of porcelain or a combination of porcelain and vulcanite, with a metal saddle, or entirely of vulcanite with the teeth ordinarily used. We have been in attendance at three meetings lately where this system was demonstrated. The Odontological meeting in New York, Alumni Clinic in Chicago, and Alumni Clinic in Buffalo, where it was received with marked appreciation, several remarking that "it was bound to revolutionize this particular line of prosthetic work." Dr. Griswold desires to confine its use to the ethical practitioners so that the method will not fall into disrepute. The method will be shown at the clinic of the N. W. U. Dental School, February 22.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

664,014. Dental floss holder, Wm. C. Coryell, Youngstown, O., assignor of one-half to J. S. Coryell, Chicago, Ill.

664,126. Dental floss holder, James W. Cowan, Geneseo, N. Y.

664,412. Teeth regulating appliance, Miland A. Knapp, Minneapolis, Minn.

664,830. Dental articulator, James W. Bryan, Russellville, Ky.

664,857. Fountain cuspidor, George B. Haycock, Chicago, Ill.

665,571. Saliva ejector, Charles O. Metzler, Omaha, Neb.

665,698. Dental plugger, Willie F. Slack, Northwood, N. H.

TRADE MARKS:

35,717. Porcelain teeth, Dentists' Supply Company, New York, N. Y.

35,737. Toilet preparations for teeth and hair and perfumed soap, Roger & Gallet, Paris, France.

35,735. Tooth-powder or dentrifice, Hannah Works, San Jose, Cal.

LABELS:

7,970. Red Raven Dentine, for a tooth and mouth wash, Meyer & Gleim, Cleveland, O.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

THE ISAAC KNAPP DENTAL COTERIE, OF FORT WAYNE, IND. PROGRAM FOR 1901.

Officers: J. Milton Rosenthal, President; R. S. Viberg, Treasurer; J. S McCurdy, Secretary; Program Committee, S. B. Hartman, W. W. Mungen, J. S. McCurdy.

January 10. Office of Dr. French. Election of officers.

January 19. Residence of Dr. J. M. Rosenthal. Anniversary meeting.

February 14. Office of Dr. Shryock. "Crown and Bridge Work," Dr. Shryock.

March 14. Office of Dr. Johnson. "Removable Facings in Crown and Bridge Work," Dr. Johnson.

April 11. Office of Dr. Mason. "Alveolar Abscess and Inflammation of the Peridental Membrane," Dr. Mason; "Treatment of Diseases of the Antrum," Dr. Coyle.

May 9. Office of Dr. H. C. Sites. "Orthodontia," Dr. Sites; "Anesthesia," Dr. Stonecifer.

June 13. Office of Dr. Viberg. "Pyorrhea Alveolaris," Dr. Viberg; "Gold Fillings," Dr. French.

July 11. Office of Dr. Mungen. "Logan and Porcelain Faced Crowns," Dr. Mungen; "Report of Tri-State Dental Meeting," Dr. McCurdy.

October 10. Office of Dr. Rosenthal. "Fracture of Maxillary and Interdental Splints," Dr. Rosenthal; "Local Anesthesia," Dr. Keel.

November 14. Office of Dr. Hartman. Model clinic by each member of the coterie; "Preparation of Root Canals," Dr. Hartman.

December 12. Office of Dr. McCurdy. Papers by honorary members.

SYDNEY, NEW SOUTH WALES. DENTISTRY.—ALFRED BURNE, D. D. S.

About the year 1840 attention was attracted to the unsatisfactory state of affairs regarding dentistry both in England and America. In each of these countries strenuous efforts were made to qualify, elevate, and raise in public estimation those who practiced this profession.

About this time in England dentistry may be said to have been divided into three sections: First. Those who wished that all dentists were fully qualified surgeons. Second. Those who desired them to attain to only a certain amount of surgical knowledge, and thus to be subordinate to fully qualified medical practitioners. Third. Those who hoped that the dentists would be altogether dissociated from surgeons and obtain diplomas from a college of their own.

The position of dentistry at the end of this century is unrivaled among contemporary sciences and arts, and compares most favorably with medicine and surgery. Though these other branches of the healing art have made great strides in the same space of time, yet it can be said that for system and well-rounded development no other science has outrun dentistry.

Medicine and surgery, unlike mathematics, are not exact sciences, but of all branches of surgery there is probably none in which the realization of the ideal has been so nearly secured as in dentistry. At the termination of the year 1900 the position attained by dentistry as an art and science is unassailable. Its shrine is surrounded by an army of enthusiastic and indomitable workers. Every source of science has been ransacked for contributions to secure such perfection as can possibly be attained, and all the latest improvements in antiseptic surgery, electricity, metallurgy, and chemistry have contributed to raise dental science to the high level which it has now reached.

Dr. Chas. Godon is director of *L'Odontologie.* The doctor's degree has been conferred since the meeting of the dental congress.

A NEW DENTAL SOCIETY.

The "Society of Dental Science" is a new organization founded in St. Louis. Dr. A. H. Fuller, President; Dr. M. R. Windhorst, Vice President; Dr. Emma E. Chase, Secretary and Treasurer; Drs. E. H. Angle, R. Summa and J. H. Kennerly, Board of Censors.

HYDROGEN DIOXIDE IN APPENDICITIS.

In a case of appendicitis with abscess, hydrogen peroxide is a sheet anchor. Armed with this resource, one may without hesitation open pus collections freely, separate peritoneal adhesions without regard to exposing the general peritoneal cavity to infection, and in short, he can work in violently infected cases without fear of lighting up general peritonitis. As soon as pus appears proceed to blow it all out of the cavity by introducing hydrogen dioxide in sufficient quantity to accomplish that purpose. Separate adhesions and search for further pus collections and the infected appendix. If pus appears repeat the same procedure.—*Robert T. Morris.*

APPENDICITIS.

As far as our present knowledge extends, the appendix vermiformis in the human being is rudimentary and functionless, and therefore of no possible use or benefit to man. At any rate he seems to get along as well, or better, without it than he does with it. An operation for appendicitis is performed in all cases for two reasons—first, to save the life of the patient, and secondly, to remove the cause of the disease. These requirements will not be accomplished unless the appendix is removed in every case. It is bad and imperfect surgery to leave, after an operation, the cause of the trouble.—JAMES B. MORGAN, M. D., *International Journal of Surgery*, October.

THE GERMICIDAL PROPERTIES OF ETHYLIC ALCOHOL.

Bertarelli (*Il Policlinico*, October 1, 1900) has tested the germicidal properties of ethylic alcohol in various strengths from twenty-five per cent to one hundred. Silk threads were impregnated with various bacilli (for example, B. prodigiosus, pyocyaneus, staphylococci, vibrio, B. typhosus, etc.) then immersed in alcoholic solutions of various strengths. From these researches alcohol appears to have only a moderate antiseptic value, and the more concentrated the solution the less the antiseptic power; fifty per cent solutions are the most efficacious. Perhaps the comparative inefficiency of the stronger solutions is due to the fact that they cause greater coarctation of the peripheral masses of bacilli and so leave the central masses more or less untouched. In spite of its low bactericidal properties alcohol hinders the development and later vital manifestations of the microörganisms. Alcohol appears to have an inhibitory effect on the antiseptic power of certain germicides (for example, corrosive sublimate) dissolved in it, and the greater the alcoholic strength the greater the inhibitory power.—*British Medical Journal.*

OBITUARY.

WILLIAM GEORGE BEERS, L. D. S., D. D. S.

Died, of heart disease, in Montreal, Canada, Dr. W. George Beers, on December 26, 1900.

Dr. Beers was born in Montreal in 1841. Began the practice of dentistry in 1865; was L. D. S., Quebec, Ontario, and England, and in affiliation of the Dental College of the Province of Quebec with Bishop's University; in 1896 was given the degree of D. D. S.

He was one of the most active workers in the dental profession in Canada. He established the first dental journal in that country--the *Canadian Journal of Dental Science*—and edited and published it during its existence. Later, in 1889, when its successor, the *Dominion Dental Journal*, was started, he was made editor-in-chief, a position he held continuously till his death. He was influential in securing legislation to regulate the practice of dentistry in his native province, and was, for eleven years, Secretary of the Dental Board of Examiners. He was also, for some time, Dean of the Provincial Dental College, and was ever active for the best interests of the dental profession.

Outside of professional attainments, Dr. Beers made a reputation in several fields. He had well cultivated literary tastes, and was a frequent contributor to the periodical literature of his day, besides being a polished public speaker. If his energies had been confined to the field of general literature, he would have been known to-day as one of the foremost men of his time in that line.

He took an active interest in athletics, and was heralded in Canada as the father of lacrosse. It was he who formulated the rules of the game and wrote the first book upon the subject. In 1876 he took a team to England where the game was wholly unknown till then. The crowning event of this tour was a command from the Queen to play before her at Windsor Castle where after the game the members of the team were presented individually to Her Majesty, and each was presented with an autograph photograph.

Dr. Beers was the only life member of the Montreal Amateur Athletic Association, and on the occasion of his death the flags on the association buildings were at half mast.

As a man, as a dentist, and as a patriotic citizen he was always to the front with whatever he deemed to be for the greatest good, and the profession of Canada are indebted to him for hewing the way through many a rough place in the profession's history.

THE

DENTAL REVIEW.

VOL. XV. CHICAGO, MARCH 15, 1901. No. 3

ORIGINAL COMMUNICATIONS.

THE OFFICE ASSISTANT.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO, ILL.

In observing the methods of conducting a practice on the part of many of my professional friends, I have been impressed with the fact that few of them derive the greatest possible benefit to be obtained from an efficient and well schooled office assistant. I allude in this connection to the young lady assistant, not to the recent graduate in dentistry who enters the office of an older practitioner to do laboratory work or perform minor operations at the chair. The functions of the two are entirely different and their places in an office are distinct one from the other and their duties readily defined.

I am persuaded that the young lady assistant has not been accorded the distinction due her as an institution in the development of professional life in dentistry, nor do I think that the average practitioner appreciates the full scope of her usefulness. Even in offices where she is regularly employed it is seldom that advantage is taken of the varied character of service of which she is capable, and in the present attempt to suggest some of the many ways in which her utility may be made available it is not expected that the field will be at all adequately covered.

In discussing this question it may be well to consider briefly the kind of young lady best qualified for an assistant. In the first place she should be a true born lady—not necessarily of high birth, but with the certain instincts of a noble womanhood in her make-up. She should disdain all tendency to gossip, and yet should be agreeably pleasant to every one who enters the office. She should be even tempered at all times to meet the various exigencies which must inevitably arise in a busy practice. She should be perfectly loyal to her employer, and always aim to conserve his best interests, thereby checking impositions which he of his own accord would not be likely to detect. She should have a high appreciation of the honor and dignity of the profession, so that by her demeanor she shall impress patients with this respect. Above all else she should be neat, tidy and scrupulously clean.

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*Read before the Odontological Society, January, 1901.

Even in this short summary so many good qualities have been suggested as to probably lead to the assertion that they cannot readily be found combined in any one individual, and yet I am sanguine enough to believe that there are any number of young ladies in our cities and towns who with a little judicious and tactful coaching by their employers would fulfill these requirements to an admirable degree. I venture the opinion that in very many instances of inefficient service on the part of assistants, the chief fault may ultimately be traced back to the employer. There should be developed between the two a community of interest and a sympathetic consideration for the welfare of each other, with nothing approaching uncouthness, harshness or overbearance on the part of the employer. I need not also state that an efficient assistant of the type just outlined should receive liberal financial recompense as well as kindly appreciation.

As to the uses to which a young lady assistant may be put there is scarcely a detail in the routine of office practice where her services may not be profitably employed. If she adequately fulfills her proper function her life during working hours will be of the busiest possible character. In the morning, before the first patient arrives, while the dentist is looking over his mail she should clean and oil the engine and see that all the appliances are in perfect working order. The chair should be brushed clean and the spittoon and all other metal accessories polished bright. The chair linen should be carefully looked after and all made ready for the patient. From the time the door-bell rings till the patient is ushered into the operating room all the wants of the patient should be attended to by the assistant. While the operator is washing his hands, which should invariably be done in the presence of the patient, immediately preceding any approach to the mouth, the assistant should provide the patient with clean office linen. None of the little details tending to the patient's comfort should be left to the operator—those are the duties of the assistant.

If the operation is one of removing deposits from the teeth and polishing them the assistant should see that the patient is constantly provided with fresh water for rinsing the mouth and should also have the bulb syringe filled with tepid water in a convenient place on the operating table whenever the operator wishes to use it. At odd moments, while the scaling is being done, she should place in the handpiece of the engine a freshly mounted mandrel carrying a brush or rubber cup or whatever the operator uses for polishing the teeth, and should also mix in a small glass or porcelain dish the requisite quantity of pumice with the suitable liquid so that all may be ready for use the moment the calculus is removed. When the polishing begins she should hold the dish containing the pumice at a convenient distance from the patient's mouth so that the operator may readily insert the brush or rubber cup and pick up the pumice on it without flicking it over the operating table or the patient's clothing. When the patient leaves the chair every instrument used in the operation should be taken by the assistant to the faucet and scrubbed thoroughly with a brush and soap and water and then dipped in an antiseptic solution before being dried and placed back in position in the operating case. The assistant should be impressed with the importance of thorough mechanical brushing of the instruments as the chief dependence for cleanliness instead of relying too implicitly on the antiseptic used. No instrument once taken out of the drawer for operating should ever be replaced without this careful scrubbing with a brush—excepting, of course, such instruments as gold pluggers, etc.

If the operation is to be one of filling the assistant should aid at every turn in the same way. In the application of the rubber dam, if the tooth is a molar or bicuspid where a clamp is indicated, the tray of clamps should be placed ready at hand and the clamp forceps beside it. This may be done while the operator is punching the holes in the dam. The moment the clamp and dam are carried to place on the tooth the assistant should fasten back the edges of the dam around the patient's head and also assist in the further adjustment of the dam. The matter of napkins, cheek pads, the rubber bib, the saliva ejector or other accessories should all be attended to by the assistant. This leaves the operator free to select the necessary instruments from the tray and proceed at once to the operation. While the cavity is being prepared the assistant anneals the gold and has it ready for insertion the moment the cavity is in a condition to receive it. This will ordinarily not take as long as it does to prepare the cavity, particularly if an electric annealer is employed—

the only necessity being to arrange the pellets or pads of gold in their proper relation on the annealer and turn on the current. The assistant is then free to use the chip-blower or compressed air on the cavity, to mallet for the chisel or assist in any way indicated. In this connection it should be her function to watch the rubber dam to see that there is no leak anywhere, to have a care that the patient's clothing is protected and be on the general alert.

When the filling is being inserted she should carry the gold to the cavity with the pliers in those positions where hand pressure is being employed, and should use the mallet where mallet force is indicated. In this one particular of malleting do we find the chief indications for the services of an assistant. An expert malleter can never be quite duplicated by any mechanical contrivance yet invented, and for the bulk of the work is more effective in condensing gold than by any other means. In those cases where the mechanical mallets are indicated, such, for instance, as condensing the final third of the filling after it has been built out so as to make all parts accessible, the assistant may pass the gold from the annealer to the filling, thus saving nearly one-half of the operator's time.

The moment the filling is condensed she should place conveniently at hand the strips or disks to be used in finishing, and also a little vaseline or other lubricant in a small porcelain dish to smear the disks or strips previous to using them. When sand paper of any kind is being used on a filling she should hold the rubber well away and also let a jet of compressed air or a blast from the chip-blower play upon the filling to prevent heating by friction. It is particularly necessary when disks or revolving appliances of any kind are in use to keep the rubber well out of the operator's way to prevent it from being caught and wound up.

When the rubber is removed the assistant should take entire charge of the wet rubber and all the accessories and look generally to the patient's comfort. If a filling is to be ground down with a stone she should stand ready with a bulb syringe to direct a jet of water over the stone and to hand the patient a glass of fresh water to rinse the mouth. None of these little attentions to the patient should be left for the operator to look after. He should be perfectly free to devote his entire attention and concentration on the operation itself.

Where an amalgam filling is to be inserted as the preparation of the cavity nears completion the operator should indicate the necessary quantity of material for the filling and let the assistant mix it while the finishing touches are put upon the cavity. She will then have the amalgam ready for insertion immediately the cavity is prepared, so that no time is lost. She should continue the trituration of the main mass of amalgam, merely separating small pellets of the material and placing them on the operating case one by one as the operator requires them. Amalgam worked in this way up to the moment of its insertion in the cavity is in the best possible condition for perfect work, and with some of our rapid-setting alloys such a procedure is necessary if good results are to be obtained.

In the insertion of cement fillings she should mix the material and pass it to the cavity, by which procedure the operator's attention is never diverted from the cavity.

If gutta percha is employed she should light the flame and place the gutta percha convenient to the operator's hand.

When medicines are to be used she should take them from the medicine case to the operating table in the readiest possible reach of the operator.

In all minor operations where dryness is to be maintained by the use of napkins or absorbent rolls she should aid in the adjustment and retention of the napkins or rolls in place, and in this connection it may be stated that with the help of an expert assistant there are very many operations which may be successfully performed without the rubber dam, but which in the hands of the operator alone never could be accomplished.

In all these various functions at the chair it should seldom be necessary for the operator to tell the assistant what to do. In other words the perception of the assistant should be so trained, and her familiarity with the operator's methods so perfect, that she knows intuitively just what is needed and the particular moment of its employment. She should anticipate every move of the operator, and even in those cases where slight modifications of method are necessary from time to time it should all be done by wordless intimations on the part of the operator so delicate in their nature that the patient is never aware of them. For instance in condensing a gold filling if a harder blow is required at certain points it can be obtained by the slightest possible nod of the head or even by a firmer grip of the plugger and a more decisive placing of the point on the gold. These delicate intimations may be brought down to such a science that a very perfect system of wireless telegraphy will grow up between operator and assistant and a community of action be developed which makes an operation proceed smoothly, harmoniously and with the greatest possible expedition. This quiet accomplishment of a result in the briefest time is very attractive to most patients in this busy modern life, and it is assuredly less of a tax on the nervous system in the shortening of each respective sitting.

Of course there is occasionally a patient whose temperament is of such a character that it is a relief to have more or less talking going on during the operation, but with the majority of individuals the quiet, quick and dextrous accomplishment of the result is most desirable.

With all of this occupation at the chair there will be many moments when the assistant is free to attend to other duties. In the opening up of a pulp chamber and the thorough cleansing, mechanically and medicinally, of the canals, a half hour may pass when she is not particularly needed. During this time she may sit at the desk in the operating room where she is available at a moment's notice. The desk work will be a change and a needed rest for her, but it will be of no less service to her employer. She should keep his books and the records of all his operations, and should attend to his accounts generally. She should notify his regular patrons at stated intervals to call for examination and should attend to the appointment book.

In short all the clerical routine of the office should be in her hands so that the operator is left free to concentrate his energies on the performance of the actual professional service required by his patients. Relieved as much as possible of all the little petty detail of business routine the operator is better equipped to give his patients the benefit of the highest and most efficient service.

In the arrangement just outlined it will be seen that the assistant is in the operating room most of the time and this plan seems to me best in every way, though it would appear that some operators do not favor it. There is an impression with many that she should be there only when actually needed and that the operating room should be as private as possible between operator and patient. I am not in sympathy with this idea in the slightest degree. It is true that the operating room should be quite free from intrusion by the public but when any sentiment arises which tends to exclude the assistant, then I fearlessly pronounce it a false sentiment. She is, or should be, as integral a part of the office equipment almost as the operator himself, and when patients object to her constant presence there is something wrong. There is something lacking in the assistant or something decidedly amiss with the patient. A tactful, obliging and unobtrusive assistant is of the greatest possible comfort to the patient as well as to the operator, and it should be a cardinal understanding with the assistant that she remain as much as may be in the operating room. This not only makes her ready at hand for immediate service but it eventually disarms any possible criticism which might arise in the professional relationship of operator and patient.

One further function of the assistant has been reserved for the last, because in its way it is one of the most important and gratifying of all. She should stand guard between the operator and imposition on the part of the public. With every professional man of any prominence there are a numberless horde of impostors of one sort or another who flock to his office to unload their schemes upon him. There are promoters and book agents, and map agents, and life insurance agents and agents of all sorts and conditions. They invariably want to see the doctor "for just a moment." But woe betide the man who consents to see them. If a busy dentist saw personally every caller of this sort who comes to his office in the course of a year it would cost him thousands of dollars worth of time, to say nothing of the irritation and annoyance. It is to ward off this sort of thing that the young lady assistant is especially fitted. Her naturally quick intuition enables her almost invariably to detect this genus of gentry the moment they appear at the door, and it should be her duty to pleasantly but firmly determine everybody's business with the dentist before they are permitted to see him.

In short the young lady assistant should stand between the operator and most of the petty annoyances of routine practice, to the end that his best energies may be reserved for tangible accomplishment.

In thus briefly outlining some of the duties of the assistant it may be urged that I have indicated an exceedingly busy life for her, and to this charge I hold myself answerable. She should be busy—it is the tendency of the age. But her work should never be allowed to drift into drudgery, nor should anything unreasonable be asked of her. She should be treated with the greatest consideration and kindliness, and the same respect and dignity accorded her as to the highest lady in the land.

From the dental profession generally she should be awarded the homage due to loyal service, for through her beneficent function she has added years of comfort to the professional life of many a noted practitioner, and to that degree has contributed her quota to the general advancement of dentistry.

COMPOUND INLAY-CAVITY PREPARATION.*

By C. N. Thompson, D. D. S., Chicago, Ill.

Cavity preparation in all its phases has ever been an interesting study to me, and I believe that the success of any filling depends more upon the proper preparation of cavity than to any other detail connected with its insertion, and for porcelain inlay, doubly so, if possible. Therefore cavity preparation for porcelain fillings requires extreme care and exactness and be it said that those who succeed do so only after long and patient endeavor.

Compound or complex as applied to cavities means a merging together of two, each upon different surfaces of a tooth, and is usually applied to either an approximal incisal, or an approximal occlusal cavity.

The preparation of compound cavities for porcelain fillings requires a more liberal opening than for any other filling. The outline shall be determined by the requirements necessary to secure sound margins, extension for prevention; depth for strength; and an easy removal of a perfectly fitted matrix; but aside from the fact that a symmetrical margin is more easily fitted, there is no need to study graceful outlines, provided the form and color of filling is correct. After a cavity has been extended to the desired outline and all carious tissue removed, the exceedingly deep parts, if any, shall be filled with cement so that there shall be no undercuts, and that the orifice shall be broader than the deep parts, taking into consideration the possibility of compound angles, which occasionally appear in these cavities, especially the approximal occlusal.

In preparing an approximal incisal cavity, my aim is to finish the incisal corner as far from possible occlusion as I can. Having studied the probable normal future strain which the tooth will be called upon to withstand, finish the margin as it approaches the incisal edge, nearly parallel with the perpendicular, with a sharp corner, thus giving the filling depth for strength at this vital point. The cervical base shall be at right angles to the perpendicular both ways, and shall extend both labially and lingually sufficiently to give broad base or seat for the filling, finishing the margin as a continuation of the floor with sharp corner.

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*Read before the Chicago Dental Society.

The margin between these two points shall be determined by the necessities of each particular cavity, but it is an easy curve generally. The peripheral enamel margin shall be finished at nearly right angles to the outer near surfaces of the tooth, sharp, smooth and true.

The deep parts of the cavity between the outer margins shall be rounded out sufficiently, if possible, to allow a considerable depth for inlay bulk for strength to retain, and shall come to and include the dentinal enamel margin, which shall be slightly rounded. It is my custom during this rounding out process to deepen a little at one point in large part of cavity, into which I may burnish matrix early in the process to insure against slipping after matrix has received imprint of the outline of cavity.

The important features in the preparation of approximal occlusal cavities are, first, that the margins shall be a continuation of the cavity walls to a sharp corner; second, that every part shall become broader from the seat towards the occlusion to insure easy insertion of the filling, and it shall also be so shaped as to allow the matrix to start sidewise towards the approximating tooth in order that the overlap of the matrix foil onto the buccal and lingual walls of the tooth may be given freedom at the start. Going into details of the preparation of this cavity, I begin with the approximal part broadening the cervix as far as decay or extension for prevention requires, making the floor or seat at right angles to the perpendicular, finishing it to the margin sharp. The side walls shall diverge from each other and also from the perpendicular as they approach the occlusal. They shall also slant outward from the pulpal wall to a sharp margin without any undercuts. This leaves a cavity which is broader at the orifice than at the deep parts every way.

The pulpal wall shall lean more and more toward the perpendicular as it nears the floor or pulpal wall of the occlusal, where it shall be rounded into the other to give room for strength here.

The occlusal part shall be shaped as a simple cavity, broadening as it approaches the approximal, with its walls slanting slightly outward and its pulpal wall at right angles to perpendicular until rounded into union with pulpal wall for approximal. These margins are exposed to severest masticating strains and shall therefore be nearly parallel if possible to the strain, and if it is required that this margin shall be exposed thus, I cut beyond the danger line if possible, even though an entire cusp be sacrificed to be reproduced in porcelain of sufficient thickness to stand.

The cavity, as a whole, shall be so shaped that a perfectly fitted matrix can be removed easily and without any drag. Each wall therefore, shall diverge from its opposite in every part of the cavity. The exact degree of divergence cannot be given, however, owing to variations in different cavities, as well as different parts of same cavity.

Edge strength and depth for strength must be kept always in mind and there shall be no thin margins to any porcelain filling. For it is known that frequent repetitions of load in the nature of severe alternating strains, in amount far below the ultimate strength of material, will eventually break down its resistance and cause failure, if thin.

MATRICES AND MODE OF PREPARATION.*

By W. T. Reeves, D. D. S., Chicago, Ill.

Mr. President and Members of the Chicago Dental Society:

The subject before us this evening has been divided under three headings and assigned to different ones for short papers, it being expected that the papers and the discussion will completely cover the subject. Appearing first on the program, I do not think it will be out of place for me to make a few general observations that are pertinent to the subject and do not come properly under any of the headings. I do so with the expectation that they will provoke a spirited discussion, and stand ready to defend any statement I make.

Porcelain inlays have come to stay. That assertion has been made before, but cannot be too emphatically affirmed; and the sooner the profession accept it and confirm their practice to it, the better for the profession at large.

There is no material known and used by the profession for the preservation of the natural tooth that has so many points of excellence and so wide a range of application as porcelain. The limitations of porcelain are only limited by the limitations of the operator in the case in hand.

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*Read before the Chicago Dental Society

Fads have come and gone and have been remembered only as fads, but porcelain inlays and porcelain restorations will become an accepted practice and a fixed principle in operative dentistry. Our nomenclature should be added to, for but a small per cent of cases can properly be called inlays, nor can they be called fillings; for you do not fill but restore. Therefore I would suggest that those cases that are not properly inlays be called porcelain restorations.

Again, there is the possibility that Porcelain Operative Dentistry will become a specialty, and I do not know but that will be its ultimate end and tend to its best development; for there is no task before the operator that is so exacting in its every step as the making of a porcelain inlay or restoration. There can be no good, bad, or indifferent inlays. They must be absolutely perfect in fit or they are a failure.

The requirements are two-fold, mechanical and artistic. The mechanical is of the first importance, for a perfect fitting inlay or restoration will do more for the preservation of that tooth than any other material we now use, and although it may be lacking in color effect, it will look better than any other material that might have been placed there. But when you combine with a perfect fit a happy combination of bodies and color effect that makes it indistinguishable from the tooth itself, you have given the patient the best service it is possible to render and have come near reaching perfection in dentistry.

Again, he who essays to do this work must be actuated by a higher motive than the dollars and cents there is in it; for I tell you now you can make more money in any other line of work for the same amount of time spent and nervous energy used than you can in porcelain work. But what will you do when your patients demand porcelain work, and porcelain in its perfection? You will either have to be prepared to do it yourself, or will have to send them to some one who can; hence I say the possibility that porcelain operative dentistry may become a specialty. Already I have had several patients sent to me for porcelain work by dentists in the city and out of the city and from beyond the state.

All things of whatever nature are first brought out by the enthusiast. To others, fired by that enthusiasm, often falls the task of development. But to be successful in any undertaking or task, however lowly or exalted be its sphere, one must be ever an enthusiast in the deed to be accomplished. I am called an enthusiast and am willing to be so called, when enthusiasm has been held in check by prudence and has passed through seven years of practical clinical test and development. Hoping to hear from you all on some of these propositions, I will pass on to what was assigned me to write upon.

Matrices and Mode of Preparation: Porcelain workers to-day are divided into two camps: those using low fusing bodies and those using high fusing bodies. To the first belongs the gold matrix and to the last, of necessity, belongs the platinum matrix. The one strong point advanced and harped upon by the users of gold for making matrix is the ease with which it can be burnished into the cavity. But the task that can be accomplished easily does not develop a man and is often faulty and defective through carelessness brought about by the ease with which the work can be done. The tendency of to-day is toward the use of high fusing bodies for all inlay work and platinum of necessity has to be used for making the matrix.

Rolled platinum 1-1,000 of an inch in thickness is what I have always used, and it has several points which make it superior to platinum 1-2,000 of an inch in thickness. The very fact that it requires more work and care to burnish into the cavity will make a more perfect matrix when the work is accomplished. Also it will have more stability and reduce the danger of warpage while baking the porcelain to the minimum. There is one other feature in the handling of bodies that I shall speak of in the discussion, that I believe almost, if not entirely, eliminates the danger of warpage.

I will not take your time to go over methods of burnishing that I formerly used. If I did it would be to show their defects and to criticise what has appeared in essays and discussions in the past two years. The present method has been an evolution, and I have held to it now for about four years. I have been asked to give it in detail.

The burnishing of a matrix I divide into four divisions or steps. Needless to say that the burnishing at each step is repeated until accomplished, annealing each time the matrix is returned to the cavity. A piece of 1-1,000 platinum is cut large enough to extend well beyond all the margins other than the cervical margin. After annealing in the Bunsen flame, place in position so that the surplus will be about equally distributed beyond the margins of the cavity;

take a pledget of wet cotton or spunk and place so as to depress the platinum into the cavity, using a medium sized, round nosed burnisher and adding additional pledgets of the wet cotton as the platinum is carried to place, care being taken that at no time are you in danger of the burnisher going through the cotton. At this step you do not attempt to turn the platinum over the margins. Remove the cotton and matrix from the cavity, and if your packing has been thorough, you will find the platinum has been carried to every part of the cavity and your margins fairly well defined with little or no danger of breaking through the platinum. If you have broken through the platinum inside the cavity no harm will result, as the body will bridge across without danger of flowing through. If you have any surplus at the cervical margin that will press upon or hurt the gum while burnishing, trim away at this time. Anneal and return to the cavity for the second step.

Pack the cavity full of wet cotton, but not over the margins. Then, using any method that is easiest, turn the platinum over all the margins and down upon the tooth, letting the folds come where they naturally will, and fairly well burnish to the surface of the tooth. Remove from the cavity, and if the platinum has lapped over the tooth far enough to bind and hold into the cavity, trim away until the matrix will remove from the cavity freely. Anneal and return to the cavity for the third step.

At this stage your work is entirely upon the margins. I have devised several burnishers, which together with round-nosed burnishers, I find accomplish this work thoroughly. (Pass around.)

The platinum that laps over on the tooth will enable you to hold the matrix in the cavity sufficiently securely with your fingers for you to accomplish this work. All wrinkles or folds must be burnished out and beyond the margins in both directions. It matters not if the matrix springs from one part of the cavity while burnishing upon another, although you will endeavor to hold it in place as firmly as you can, for the next step will correct all faults of that nature. The instruments I have passed around are used so that the head of the burnisher bears upon the margin cavity-wards and the shank upon the margins tooth-wards; the other instruments bearing in the same manner at the cervical portion of the cavity and upon the occlusional surface or cutting edge, using round nose or flat burnisher respectively.

Now you come to the last and final burnishing. If there is any feature in burnishing a matrix that I might claim as original, I think it is at this stage, for I do not know of its being used by any one previous to my showing it or through my suggestion of its employment. That is a method by which the matrix is held firmly to every part of the cavity and at the same time will not interfere with the burnishing with every part and surface of the matrix. For that purpose I use a strip of rubber dam, which is drawn tightly and binds the matrix into the cavity in all directions. You can now go over all the margins and surfaces and burnish out all the spring there may be in any part of the matrix.

Now comes the task of removing the matrix from the cavity without warping it. By patient and careful teasing you can accomplish this without any warpage. If you are afraid you have sprung it ever so slightly, dry out the cavity and dry the matrix, place it in the cavity and use the rubber dam again. This time it will tease out easily. The capillary attraction of the saliva between the matrix and the tooth will often hold it very tightly.

You run more risk of warpage in the removal of any material that may be placed in the matrix to facilitate its removal from the cavity, besides the danger that some may remain upon your platinum and cause the porcelain to gas in baking. Grasp the edge of the platinum at some point as far removed from margin as possible, and where there is no fold to make it rigid, with a pair of laboratory pliers that you can lock. Burn off the saliva in the Bunsen flame to avoid any possiblity of gassing. The matrix can now be handled freely in building in the porcelain, for any bending of the platinum will take place at the pliers and not near the margins.

I may have gone too much into detail, but I believe if the method is carefully followed you will have a perfect fitting matrix

BODIES, COLORS AND SHADOWS.*

By W. H. Taggart, D. D. S., Chicago, Ill.

The title of my essay in this symposium on porcelain inlays is "Bodies, Colors and Shadows." Neither one of these parts of my subject is one-half as essential in making a perfect inlay as the "know how part."

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*Read before the Chicago Dental Society.

While bodies, colors and shadows may play quite an essential part in this artistic process, do not for a moment think that either the porcelain bodies or colors will ever be furnished us that can make porcelain inlay work artistic. The artistic effect must come entirely from the operator and his ability to choose the proper porcelain for any particular case must come from natural aptitude, or a vast amount of practice. So do not put off learning this process because you think some day you will have perfect materials and then you will commence, but commence now and by the time you have acquired a certain amount of ability, by that time you will appreciate the fact that it is the "know how part" that is more essential than the materials.

There are, however, certain underlying principles that must not be lost sight of, and one of the first of these is (of course remembering that in this paper I am not expected to refer to cavity preparation, or making of the matrix) that an inlay can never be made to match a tooth when only one color is used in its construction. Take, for instance, an approximal cavity in a central incisor extending any part of the distance from the gum margin to the incisal edge. No matter how perfectly you may match either the incisal edge, which is one color, and the neck of the tooth, which is another color, the inlay will look badly, whereas if the neck had been made of yellow porcelain and the tip with blue porcelain or whatever color was necessary to match it, and the two colors had been given a gradual gradation by blending one into the other, the effect would have been very artistic.

The main reason a cement filling in a front tooth looks so inartistic is because it is all of the one color and yet this cement may match beautifully either the tip or neck, but cannot match both. So I say to get correct effects blend your colors. Another principle, you can get much better effects if the bulk of your porcelain is made of the yellow porcelains and the colors to match the tooth put on top of this, in this way you get the soft blending of the colors and the rays of light do not pass as they would through a piece of glass or a piece of porcelain all of one color. If you examine closely a natural tooth or a beautifully colored artificial tooth you will almost always find the yellows predominate on the palatine side. Another thing that will affect the color of a porcelain inlay is the thickness of it. Supposing the bulk of the filling is made of yellowish tinge and you choose a certain color of porcelain to veneer over this to match the tooth, you will find you can get several different shades according to the thickness of the porcelain and here again comes in the advantage of the know how part.

Another thing that will affect the shade of a given color of porcelain is the way in which it is packed. So one dentist who condenses his porcelain thoroughly before it is baked will get a porcelain several shades darker than one who carelessly packs the porcelain, for the reason that air spaces in a given color of porcelain have a tendency to lighten the shade. So you see there are several conditions which govern the color of the baked porcelains regardless of the color in the porcelain itself.

After these few words on the colors I now come to the question of bodies. Shall it be the high fusing requiring a platinum matrix or the low fusing using a gold matrix? My preference has been and is now in favor of the high fusing. Why? Because it seems to take a more natural or rather vital coloring. The low fusing porcelains get their color from the pigments mixed with them the same as we color white lead paint by mixing so much of any coloring matter with it; whereas the coloring in high fusing porcelains is brought out by the chemical changes which take place at the high temperatures necessary to fuse it and this gives the more lifelike appearance to the porcelain. The lower fusing, while made in a great variety of colors which we can apparently match, always seem to have a muddy opaque look as compared to the vital, translucent look of high fusing porcelains.

At this point would be the logical time for me to try and persuade you against that foolish notion that the gold can be better adapted to the walls of the cavity than the platinum, but will do no more than give it this little slap merely to show you that I am awake on this point and only wish I could have had that part as my subject for the evening.

A word as to whether we shall use inlays or not. I say yes, but do not be indiscriminate in their use. Choose your cases and only put them where the necessity for artistic effects outweighs all others. Not but what they are lasting and satisfactory in saving the tooth from decay, but for every other quality except looks, always bank on gold as a filling material. Remember that in making these fillings the results you get will depend on your ability to handle the material and not on the material itself, bearing in mind that some dentists can put in good gold fillings with any gold made, while others can not put in good gold fillings with the best gold that was ever manufactured.

But do not be discouraged about your first results. Remember it is a new line to you and will require a patience and perseverance and skill which no other part of dentistry requires, but when you once begin to get satisfactory results you will be amply repaid for your efforts.

DENTAL HISTORY; THE SUCTION PRINCIPLE DISCOVERED BY FAUCHARD.

By William H. Trueman, D. D. S., Philadelphia, Pa.

Within a few days I have had the pleasure of reading "Notice sur l'Historie de l'Art Dentaire," by L. Lemerle, Paris, 1900, and find on page 135 that the claim made in behalf of James Gardette, that he was the first to recognize the suction principle for the retention of upper dentures is contested, and that honor given to Fauchard. In a foot-note the reader is referred to the second edition of Fauchard's work, second volume, page 352. (This edition was published at Paris, 1746.) We there find the following: After describing the various ways of attaching and adjusting springs, Fauchard says, "On peut faire & placer à la machoire supérieure tout un dentier, qui soit beaucoup plus simple, & qui puisse y tenir par le seul appui des jouës & des dents inférieures. Il faut qu'il soit léger, & il ne sert guéres que pour l'ornement & la prononciation: Cependant quand on y est accoutumé, on peut manger dessus, ainsi que je l'ai vû. Il doit être bien ajusté sur les gencives, & assez écarté par ses extrêmitez, pour qu'il soit assez comprimé par les jouës, & qu'il en soit soutenu à l'aide des dents inférieures, qui le repoussent quelquefois dans sa place, sans qu'aucune autre personnes que celle qui le porte puisse s'en appercevoir. Depuis peu j'en ai renouvellé un que j'avois fait il y a plus de vingt-quatre ans, dont on a fait un très-utile usage. J'en ai fait dans la suite deux autres pour deux personnes qui s'en servent aussi avantageusement. Il est vrai qu'il y a peu de bouches qui soient disposées à recevoir ces sortes de dentiers, & je n'ai jamais fait que les trois dont je viens de parler. Il faut que le Dentiste qui entreprend cette derniére sort de dentiers, ait du génie & de l'habileté, s'il veut y réussir. Au reste, ce sont ceux qui coûtent le moins, & ils conviennent aux gens qui ne sont pas en état une certaine dépense."

Translation: "We can make for the upper jaw a full denture which is much more simple, and which is held by the support of the jaw and the lower teeth only. It should be light (not heavy), and serve only for appearance and speaking; however, when one becomes accustomed to it, it can be used to eat upon, as I have seen. It ought to be well adapted to the gums, and wide enough to well embrace the jaw, and so adjusted to the lower teeth that they push it up to its place without anyone but the wearer perceiving it. A short time ago I renewed one that had been worn and had done excellent service for more than twenty-four years. I have made two others which have done well. It is true that there are few mouths suited to this sort of denture, I have only made the three of which I have spoken. The dentist who undertakes this sort of denture must be a man of ingenuity and skill if he would succeed. Furthermore, they are less costly and thus suited to those of limited means."

This does not appear in the first edition of his work, published 1728.

While we may question whether this indicates a recognition of the suction principle, so called, it undoubtedly indicates that Fauchard discovered and made known the possibility of retaining in place a denture supported entirely by the jaw upon which it rests, and recognized that this depends upon accurate adaptation to the gums and to the opposing teeth. Experts in prosthetic dentistry of to-day claim that this is all that is needed, and that the vacuum or suction cavity is useless in a properly fitted denture. It is hardly likely that the priority of Fauchard's announcement can be contested, as his work is the first publication entering into details of dental practice.

MANUFACTURE AND ADMINISTRATION OF NITROUS OXIDE.*

By Dr. Laird W. Nevius, Chicago, Ill.

My subject, "How to Generate pure Nitrous Oxide Gas and Administer the Same for Dental and Surgical Operations," is one that does not interest the majority of dentists and but a limited number of surgeons, and yet we all realize the fact that there is nothing so much sought after and so much appreciated by our patients as painless methods and painless operations, and he who avails himself of such methods and the proper instruments and appliances, and has the skill and ability to successfully use them, will always enjoy a good reputation and a large practice.

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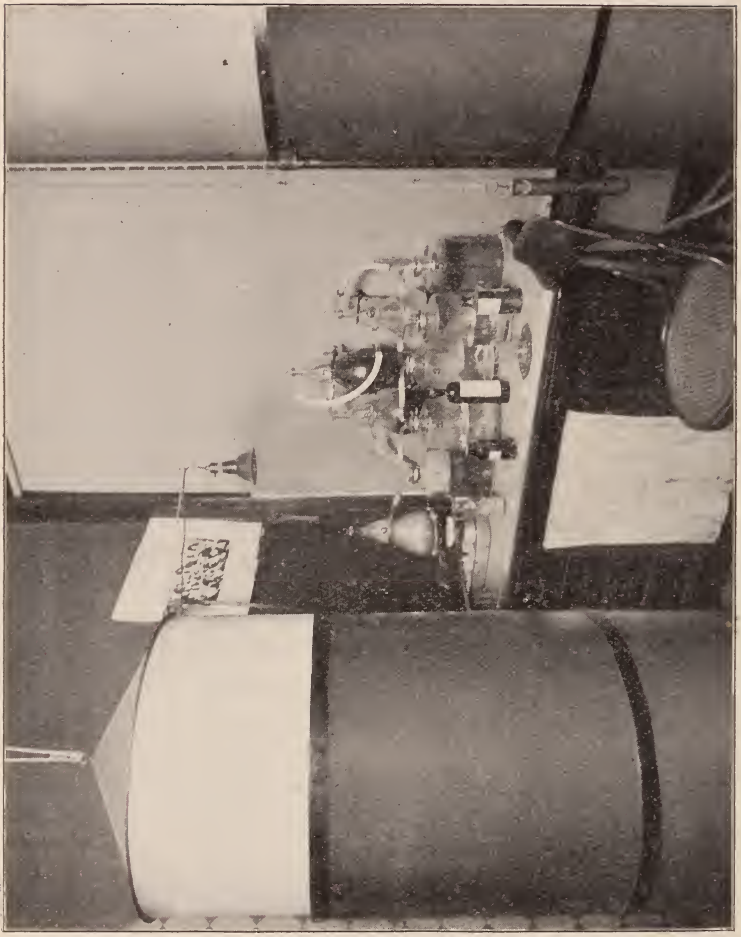
* Read before the Northern Illinois Dental Society.

Many methods and appliances have been introduced to both professions to accomplish this end; some have merit and have come to stay.—others have been discarded. Nitrous Oxide has stood the test for fifty years and will ever remain the safest and best anæsthetic for the painless extraction of teeth and minor surgery.

Nitrous Oxide is now being used by quite a number of New York surgeons for operations lasting from a half to one hour and a half, administering from one hundred to two hundred gallons of gas. You may ask me why is it the safest of all anæsthetics, and I answer, in proof of my statement, that pure Nitrous Oxide—and nothing but pure N. O. should ever be administered—is composed of exactly the same elements as common air and differs only in the proportion and combination of the two elements, oxygen and nitrogen, and they have no direct action on the heart.

To generate pure N. O. we must have a retort, a few wash bottles and a few chemicals. To assist me in explaining to you and in order that you may better understand the process, I have here a picture of the very latest improved outfit. It has now been in use for over a year and has given great satisfaction. With the outfit as shown from fifty to sixty gallons of pure gas can be generated per hour, but to do this it requires your undivided attention, for there is more or less danger, etc. I feel a little safer and think the quality of the gas a little better if run at a lower degree of heat, say thirty to forty gallons per hour. We have here a retort made from pure flint glass highly tempered. Into this retort we put about five pounds of granulated nitrate of ammonia. One pound of the nitrate will make from twenty-five to thirty gallons of gas. After filling the retort we apply the heat in direct contact with the retort, using no sand bath; at first with as low a flame as the burner will admit and gradually turning on more heat from time to time until the full flow of gas is burning. With this intense heat the nitrate becomes a liquid in from thirty to forty minutes, reaches the boiling point a few minutes later, when the heat must be reduced to a degree sufficient only to keep it boiling until the gasometer is full or the retort becomes dry. Should there be any of the liquid remaining in the retort after turning off the heat, it becomes a solid cake of fused



Dr. Nevius' Outfit for Generating Nitrous Oxide Gas, Referred to in his Paper.

nitrate and is left remaining in the retort until we again wish to generate gas, when we add a sufficient quantity of the salts to make the desired amount of gas. In generating Nitrous Oxide there is always a small quantity of water and chlorine given off and here we have bottle No. 1 to catch the drip which comes over drop by drop. This bottle fills with drip while generating from 1,000 to 1,200 gallons of gas. I empty it about once a week. In Nos. 2, 3 and 4 we have about one gallon of water in each bottle through which the gas washes as it is conveyed from one to the other by means of a long and short glass tube. These glass tubes are held firmly in place and the bottle made gas tight by heavy rubber corks. The long tube should be perforated with three small holes about one-half inch from the end in order to divide the gas into three small bubbles instead of passing out of the end in one large bubble, for the greater the number of bubbles the more thorough the washing. In bottle No. 5 we have a larger quantity of water, no rubber cork and but one tube, which is a long tube with a "T" connection. This tube answers the double purpose of indicating the pressure of gas or quantity that is being generated and forced through the wash bottles and an escape valve. The gas does not wash through this bottle, but passes direct from No. 4 to No. 6. There is no danger of generating impure gas at a temperature below 500 degrees Fah. The salts melt at about 300 degrees and at 340 to 480 degrees it boils and decomposes rapidly. At a temperature above 600 degrees Fah. two impure gases are generated in combination with the Nitrous Oxide. These two gases are Nitrous Acid and Nitric Oxide. In No. 6 we have a solution of one gallon of water and one-half pound of caustic potash. This will neutralize the Nitrous Acid should there happen to be any. In No. 7 we have a solution of one gallon of water and one-half pound of sulphate of iron commercially known as copperas. This will neutralize or free the Nitric Oxide from the Nitrous Oxide should there be any. In No. 8, we have about one gallon of equal parts of water, glycerin and rosewater. This adds nothing to the purity of the gas, but gives it a pleasant finish as it passes into the gasometer or storage receiver. We now have the gas in a pure state ready to be administered.

To properly administer Nitrous Oxide is a very much more difficult thing to do than to generate it. Any intelligent dentist can in a few days learn how to generate pure Nitrous Oxide, but it takes long years of experience, close attention to details, and a study of human nature to make a success of administering gas for dental or surgical operations. I think I am safe in saying that seventy-five per cent of dentists who pretend to use gas make a failure of it; first, because they fear serious results; second, lack of confidence in themselves; third, using an inferior apparatus. He who buys a cheap gas outfit thinking he will have but little use for it will not add to his reputation and will sooner or later have no use at all for his investment, while he who buys the very best outfit that can be procured and has the courage to use it, will soon find his reputation growing, his practice enlarging and his income increasing.

The extracting room should be a light, cheerful one. There should be nothing in the room visible to the patient's eyes that would suggest pain. In the window should be some plants, a bird, fish aquarium, or any pleasing objects that will attract the patient's attention while the operator is examining the teeth and selecting his instruments from a case which should stand about three feet in rear of chair and should be fitted with swinging trays instead of drawers; if drawers, they should be well soaped or greased so as to slide out and in noiselessly. The gasometer—a rubber bag should never be used in an office—should be filled with gas and in perfect working order, also the inhaler, before the patient is invited into the extracting room.

Everything being in readiness, the patient may be invited in and at once seated in the operating chair. It is useless to examine the pulse or ask such foolish questions as: "Did you ever take gas?" "Have you ever had any trouble with your heart or lungs?" "Did you ever have fits?" "Did you consult your physician, and what does he think about your taking gas?" As though a physician knows more about administering gas than a dentist should know! Examining the patient and asking a lot of questions tends to make the patient more nervous and suspicious of danger, and as there is nothing to be gained by it, they should be avoided. The fewer questions asked the less fussing and time spent in getting ready, the less fuss and fear and demonstrations of a hysterical nature will there be on the part of a patient.

I do not wish you to understand me as advocating there is no possible danger at all in giving gas, or that it may be given in a careless and indifferent manner, but the operator should be the doctor and somewhat of a judge of human nature, and everything that tends to make the patient nervous should be avoided, but he should not forget the responsibility resting upon him.

INCIDENTS OF OFFICE PRACTICE.*

By R. C. Smith, D. D. S., Elgin, Ill.

As I sat in my office very busy reading one of Dickens' works with thoughts of dentistry and the outside world many miles away, I was brought to a sudden realization of where I was at by the pleasant countenance of Dr. Chappell being thrust through the door. "Ha, ha," said he, "all things come to him that waits, and if they don't come we go after them. Smith," he said, "I have been looking for you for a week or more; now what subject shall I tell Dr. Perry he can expect from you?" Then I tried to square myself by telling Dr. Chappell that I did not mean to be selfish, but I thought there were others who could write much more interesting papers, and I was such a good listener, etc., that Dr. Perry would excuse me if he only knew. But Dr. Chappell was so unrelenting and excuses seemed to make him all the more intent that I should write a paper, so he proposed that I should talk on *Incidents of Office Practice* I agreed, thinking that was the easiest one of them all, but I found myself at sea to think of one worth mentioning.

One which occurred soon after I started to practice about two years ago, the patient a man about twenty-five years, with a cavity in left superior lateral and fistula. I cleaned out root canal and then forced carbolized water through fistula, then hydrogen peroxide and oil of cloves, and told him to return in one week.

When he returned the fistula was still there, so I questioned him as to how long standing the case was, and was very much surprised when he informed me he had been struck with a ball about fifteen years before, and soon after the fistula appeared on gum. Well, I treated it again as before, only using Blacks 1, 2, 3 instead of cloves, and told him to return again in a week. When he returned the fistula was there just the same, so I tried 95 per cent carbolic acid a couple of times without success, and then tried everything else in the drug line I could think of, also without success. I thought of what my professor of surgery had told me about an operation in such cases, but thought the case too much for me. So I told the patient he should try somewhere else, as I could not heal the fistula. He said I should pull the tooth out, as he would not bother with it any more. Seeing the way he felt, I decided there should be an operation at once. I enlarged the fistula so that I could distinctly see the end of the root; excavated the bone structure until it presented a healthful appearance and became quite painful to excavate any more, then smoothed the end of the root with a large, round bur, washed and packed the cavity I had made with a solution of boracic acid on cotton (the cavity being over a quarter-inch in diameter). I washed it every day for a week with boracic solution and then every other day, and in two weeks it had entirely healed up.

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* Read before the Northern Illinois Dental Society.

Another case, the patient a man of about 40 years, with a cavity in left superior lateral tooth, very sore and face a little swollen. I put a counter irritant on the surrounding gum tissue, and told him to come next day; he came back in about four days, saying it was the first time he had been out of the house since he left my office; his face was then swollen so much that I could hardly recognize him, but he said it had subsided a great deal. There was an opening at the gingival margin of the gums. I cleaned out the root canal and forced medicines through the fistula a number of times, but still pus would continue to come through the fistula. Then I told the patient I was about to make an operation, providing there was not a change for the better by the next time he came. The next time he came he said there was something at the gingival margin of the gums, and on examination I found it to be a piece of process. I took hold of it with strong cotton pliers, but could not remove it, so I got some stronger pliers and got a good hold and found what I thought was a little spicule of bone was the whole labial process of the tooth, a half-inch long and over an eighth of an inch wide. I washed out by forcing medicines through the tooth, and in a little over one week it had entirely healed up. The gums receded very little, and the tooth seems as firm as formerly.

Having bored you long enough and thanking you for your attention, I will close.

SUCCESS.*

By James W. Cormany, M. D., Mt. Carroll, Ill.

In presenting the subject of Success to you to-day is to lead you only in one avenue, and that one is the one great desire of us all, the conquering of poverty, and I shall start right in and tell you what to do and then try and give you the whys and wherefores of my lesson.

In the first place, to conquer this great bugbear that pervades this universe we must lay aside all former beliefs and prejudices and take what I give you in faith believing, and carry them out as near as possible, never wavering from day to day. Now, then, for the recipe. Upon retiring at night say several times before going to sleep, "I will arise with unusual energy and radiance and power of accomplishment in the morning." Then, upon arising in the morning, say, "Every breath that I breathe, every glass of water that I drink, every mouthful of food that I eat brings to my life health, strength and bodily vigor." Repeat this again and again, and then affirm that my business will net me—this month; this you must say to yourself time and again during the day, and whenever the though occurs during the day say it. Now this is what is called making affirmations; you make these affirmations in thought and voice, and the thinking of such thoughts and the saying of such words will bring the desired results. I do not pretend to say that you can affirm, and affirm it often enough, that one thousand dollars will be laid in your lap. No, no, it does not come that way, and it is further supposed that you are attentive to your business and that you understand your business, and capable of doing what comes to you to do in a skilful manner. Now for the theory upon which these remarks and success is based. In the first place, this is a universe meaning *One,* and it is presided over by the universal *Good;* that every desire of our hearts exists, and that the desire indicates the ability to obtain it if we put ourselves in a condition to attract and receive the thing desired. In proof of my statements I will say during the month of March I made affirmation for so much business for the month of April, and (it always brings more than is asked for) it went fifty-seven dollars more than I asked for. The months of May and June I made no affirmations, and they fell below the average. Commencing the 26th of June, I made affirmations for so much business for July, and it went nearly twice as much as I asked for, and I left for my vacation July 28, and did not return until the 13th of August, and I made affirmations for the remainder of August, and more came than I asked for, and for September brought me as usual more than asked for, so you see I not only give you the rules to overcome poverty but also back them up with the proofs of my own experience. Go now and do likewise, and before closing let me give you a little quotation from Helen Wilman's "Freedom": "Those who will not cultivate their inner mental forces; those who will not turn from the ideas that have caused their misery; those who will not break loose from their inherited beliefs; all such will necessarily go where their fathers and grandfathers went."

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* Read before the Northern Illinois Dental Society.

"Of what avail would evolution be if new knowledge did not give new powers?

"Therefore, if we do not gain more knowledge we can not manifest anything different from what our ancestors manifested, and these ancestors are dead."

"We must take off the brake and allow the free circulation of mental currents of prosperity and vitality."

And further, let me say, when one absolutely knows a thing one is never disturbed by what other people think.

GINGIVAL CAVITY FILLING WITH TIN.*

By A. N. Stone, D. D. S., Elgin, Ill.

On arriving home from my Hay Fever trip I was called upon by the President of this society and informed that I was expected to write a paper to be read before you at this meeting. You cannot imagine what that meant to me, being called upon to do that which I had never attempted before, and do hope will never occur again. But that was not the worst of it. I was to select my own subject. I could think of nothing that had not been threshed and rethreshed until there was nothing for me to feed on but chaff, until one night I was suddenly awakened and actually frightened to think what I knew about tin as a stopping in gingival cavities, and am expected to tell it in five minutes.

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* Read before the Northern Illinois Dental Society.

I guess it can be done in less time. Now, while admitting gold to be the best material in a large percentage of cavities, I want to speak a good word for tin, in the class of cavities mentioned. My reasons are that while gold only prevents decay by excluding moisture its conductivity is a quality which is dangerous; tin not only excludes moisture as well as gold, but its other good qualities are its oxide deposited on the surface of the cavity and its very low conductivity. It is more easily packed, is very soft, and does not harden but little, if any, under instruments. Tin should be chemically pure, and can be procured at any of the dental depots. I am not going to give you any instructions how to shape cavities, for you know that as well as I do, but when packing overfill and condense with broad-faced instruments and burnisher. It is easily finished with disks and fine strips; use the burnisher last.

In conclusion, will say that in my experience tin is the best stopping for the above cavities, and why it is not more generally used I cannot understand, unless that it is not taught in the dental schools of to-day. To the younger men in the profession I would advise a trial of it. (I don't expect the old gold builders to use it unless at the cervix and in connection with gold.) You will find that your patients will not be returning in six months or a year with a loose filling caused by secondary decay.

LITTLE THINGS MAKE PERFECTION, BUT PERFECTION IS NOT A LITTLE THING.*

By B. T. Emigh, D. D. S., Aurora, Ill.

In our specialty the scientific care of the human teeth, no less than in all other branches of true science, does success or failure depend very largely upon the most careful and painstaking attention to seemingly trifling details.

In a large majority of cases of unsatisfactory gold and alloy fillings from the hands of young practitioners the trained eye of experience instantly detects the sole cause of failure in the imperfectly prepared cavity. Our colleges persistently teach, but certainly fail to sufficiently emphasize the importance of cutting away the tooth-structure until the enamel rods are securely protected by sound dentine. Otherwise the enamel will crumble away from the edges of the filling, leaving spaces for the lodgment of particles of food, and failure to preserve the tooth, results.

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* Read before the Northern Illinois Dental Society.

In preparing cavities for fillings of alloy, the edges should be made square rather than beveled, as a thin edge of amalgam never wears well. Mix the alloy slowly and thoroughly, pack it with equal pressure throughout, and after giving it sufficient time to harden the surface should be polished with the same pains given by many dentists to fillings of gold.

Occlusion is another much neglected feature of tooth filling. No filling can successfully resist the force of mastication unless its occluding surface fits perfectly to the opposing tooth. Too much careful attention can not be given to this point.

In regard to root-filling, I believe the men are succeeding best who thoroughly cleanse by instrumentation instead of by mummifying or medicating. In the preparation of root-canals there seems to be only one proper way of proceeding—that is to open the cavity so that the operator works in direct lines, for it is a well-known fact that no efficient work can be done without the aid of light. With canal-cleanser and sulphuric acid open the canal to its apex, leaving it as nearly conical as possible. When the canal is thoroughly cleansed and desiccated we are ready for the canal filling, and the question arises, "What material shall we use?" It is a subject that has provoked much discussion in recent years. In my own practice in the last five years I have used paraffine in conjunction with gutta percha with excellent results. My method is as follows: With pliers a cone of paraffine is passed into the canal, and with a rotary motion of a heated instrument is melted to the walls, leaving a conical space in the center, into which is inserted an ordinary canal point of gutta percha. Then with a warm instrument the remaining space is carefully packed full.

In my opinion the most abused material for filling teeth is cement. It is a prime favorite with the lazy or unprincipled dentist, and is often used by him in the most shameful manner. And still, in its proper place, cement is indispensable. By using gutta percha in that part of the cavity that lies beneath gum margins it is a useful filling for those who can not afford a better one.

Much has been written and much has been said on the obtunding of sensitive dentine. When the cataphoric craze came on I, like many others, invested in an outfit, which I still use in many cases.

I find no other way to cut off a live tooth with so little pain as with the use of this battery. With a thin-edged carborundum disk a groove is cut through the enamel of the tooth to be removed, a crystal of cocaine rolled in a pellet of cotton is moistened and placed in this groove; the point of the electrode is then applied to the tooth, beginning with two volts, gradually raising it to twenty, and holding it there for fifteen minutes, when cutting can be accomplished with little or no pain. I make use of cataphoresis in this way oftener than in any other. When a number of cavities are to be prepared for filling I seldom use it, as it consumes too much time. In cases of hypersensitive dentine I administer internally ten grains of chloral hydrate, five to seven hours before operating. This, in most cases, is sufficient, but a second dose of five grains is occasionally required.

Too much stress can not be placed on the importance of sharp excavators and sharp burs in cleaning out cavities. The dentist who will revolve a dull bur till it smokes in the mouth should have a tooth of his own filled every day as an educator.

In conclusion, it would be well for every dentist to acquaint himself somewhat with the mysteries of electricity and to provide himself with an outfit, for as "coming events cast their shadows before" so it is evident that the dentist of the future will have to do a greater amount of work for the same money we are getting at the present time, and he will need all available resources to aid him in accomplishing these results.

THE FIRST PERMANENT MOLAR.*

By G. B. Elliott, D. D. S., Elgin, Ill.

It is with the idea of gaining information and not imparting it that I have chosen the subject of the first permanent molar. Even in my limited experience it has been on numerous occasions a problem as to what was the wisest course to pursue in dealing with these, to me, frequently troublesome cases. If the patient be one who has had proper dental attention paid to the temporary denture, the first permanent molar is a less serious problem, but in the class of patients who have received little or no attention until after the eruption of this tooth the difficulties are not inconsiderable. Erupting immediately distal to the second temporary molar which is often in an advanced carious condition, it is exposed immediately upon eruption in a great many cases to carious action. The mesial surface at the age of eight or nine years is often so far advanced in decay as to seriously endanger the vitality of the pulp. At this time, if I can remove the more superficial portions of carious matter and insert a cement filling without encroaching upon the pulp, I do so. I feel justified in leaving some discolored and leathery dentine in the deeper portions of the cavity if in this way the pulp can be preserved intact until such time as the roots have fully calcified and the conditions are favorable for the performance of a more permanent operation with some hope of success. If the pulp is destroyed before the calcification of the roots is complete it seems to me the chances are poor for such a tooth remaining permanently useful. Again, when the destruction is so far advanced as to have caused the death of the pulp, extraction seems to be the only alternative. Dr. W. Mitchell, in the *Cosmos* for July, 1899, shows by models some very satisfactory results following the extraction of all four first permanent molars at the age of eleven years, when the second molar soon erupts and comes forward into the space left by extracting the first molars. Such procedure I should think proper when the age conditions are favorable, as he states. What are we to do when extraction seems necessary at the age of nine or ten years, no second molars to come for two or three years? Extracting one is quite sure to cause malocclusion of a pretty serious nature. Still it seems wrong to deprive the young patient of their only means of mastication, save the remnants of the temporary set, for a period of two or three years by extracting all four first permanent molars. I realize that circumstances must govern largely our judgment in handling these cases, but would like to know the practice of older men in dealing with them.

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* Read before the Northern Illinois Dental Society.

PORCELAIN CROWNS.*

By M. L. Hannaford, D. D. S., Rockford, Ill.

The many truly great expositions of the art of dental ceramics which have been given to the profession, and the magnificent specimens of the work shown, it is true by a comparatively few individuals, would seem to render anything which one such as I might say or do almost a waste of valuable time.

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* Read before the Northern Illinois Dental Society.

In this, as in all other great advances in science or art, a few leaders have blazed the way as it were into an unknown country, while the rest of us, lacking the ability, or in some cases I fear the unselfishness, to essay the front rank, must follow as best we may in their footsteps.

Some five or six years ago, at the meeting of this society at Rockford, Dr. W. H. Taggart showed some beautiful specimens of porcelain crowns; he also said in that meeting, "Gentlemen, I predict that this will be the crown work of the future. I advise you to begin your experimental work *now.* Get into the band wagon, for you will have to come to it sooner or later."

Now I am credibly informed by men who travel about the state that in this year of grace, nineteen hundred, the number of towns in which porcelain ovens are owned and operated is very small. What is the reason? May not one reason be that there is prevalent too high and altogether artificial an idea of the knowledge and skill necessary to the beginning of porcelain work?

If so, take now the advice of one who does not assume to be nearer the band wagon than the second animal cage and buy a furnace and go to work at it. Your first efforts may not be artistic; they should be just as useful as the gold and other crowns you have been making, and your art skill will grow with experience, provided you have natural taste.

But to the specific work in hand, the construction of a porcelain bicuspid. Having the root filled, grind the tooth to a fair working length, say one thirty-second of an inch from the gum, scale off the remaining enamel with Johnson's or Case's cleavers, having first applied cocaine freely to the adjacent gum. Easy to say, not so easy to execute. Use the palm grasp on the instrument with thumb resting as a fulcrum on the adjacent tooth wherever possible. Take measurement for the band with binding wire; slip the resulting loop on to a tapering mandrel as far as it will go and mark the place with scratch of a file. Cut strip of platinum, 28 ga., somewhat wider than the required band for convenience in handling, and long enough to lap ends slightly. Bevel the ends where they are to lap, and after annealing wrap it around the mandrel below the scratch and bind with wire. Solder with platinum solder if convenient, otherwise pure gold will answer. Slip it on to mandrel and with gentle taps of a light hammer stretch it until the upper edge will pass the scratch. You have now a band which will fit the root with no guesswork about it.

Anneal it and apply to the root, with large diameter toward the gum. When you have reduced the edge to correspond to outline of the gum and made it thin and smooth, and not until then, force it to place under the free margin of the gum. Remove and dress down the root end to a point under the gum labially and slightly less lingually. Replace the band and trace on its inner surface with a sharp-pointed instrument the form of the root. Remove and trim to shape, then adapt a piece of annealed platinum 28 or 30 ga. to complete the cap, allowing it to extend over all around, for convenience in soldering. Bind it to place and catch at some convenient point with solder. Then go carefully over it with a burnisher, pressing the cap into the closest possible adaptation to the band. Now a broad flame of the blow-pipe will probably carry the solder clear around. Trim off excess of platinum and bevel the edge of cap for reception of porcelain body later.

Ream out the root canal for reception of a tapering iridio-platinum pin as large as diameter of root will safely allow, and of length in the root equal to greatest height your crown is to be with a projecting end for convenience in handling. Punch a hole in the cap approximately corresponding to hole in the root. Apply cap to root in its correct final position, insert the pin and tap to place. Remove pin and cap together, having cemented the same if necessary with sticky wax, and solder. Replace on root and take combined impression and articulation in modeling compound. Remove and place cap in impression. Select your facing; mold a bit of temporary stopping over end of root to keep the gum away, retaining it in place with a minute brass carpenter's screw, and dismiss your patient. Smear the inner side of cap and the pin with wax and construct your articulating model of plaster. Melt the wax in and remove the cap, that it may thereafter go on and off easily. Grind the facing to cap with labio-gingival portion overlapping band, thus concealing the same in finished crown. Bend pins of the facing downward toward cap; if long enough to reach and be soldered to it, as well as to the projecting end of dowel, so much the better. Wax facing to cap with sticky wax and invest in ground asbestos, wet enough to mold readily with the fingers. Put immediately over a drying flame, allowing wax to melt and burn out;

then solder facing securely to cap as above stated, and if gold is used for solder, continue the heat until all gold color is gone.

When cold grind off and smooth all ends of pins and sharp angles, score the top of cap with sharp instrument, and if you choose drill one or more holes through it, starting the drill from the inside, thus turning up a "bur" and making a counter-sink for the firm holding of the porcelain body.

Having the work now thoroughly clean, place in a pin-vise and begin to apply the body mixed with water in which a small amount of gum tragacanth has been dissolved. The first portions should be thin and jarred thoroughly to place, then the bulk of crown should be gradually built up, great care being taken that the structure should be solid from repeated tapping and drying with a napkin.

Place the crown upon model and carve to permit proper bite and knuckling. Most beginners will require two bakings to complete a crown on account of lack of experience in estimating shrinkage, but later he will find he will be able to correctly judge the necessary "flush" to be allowed the occluding surface and contour, in order that it may be right when fused the first time. No amount of instruction can take the place of experience in carving and baking porcelain. We have been told repeatedly and rightly that thin veneers of porcelain will not stand—that we must have a certain bulk to insure strength. The body must not be overfused—the length of time required to fuse varying with different furnaces and currents, and must be determined by the individual.

In conclusion, I venture to hope that the above, coming from one who has been fairly successful, yet not in any sense an expert, may stimulate some one to begin that which he has heretofore hesitated to undertake through the mistaken notion, either that his practice does not require porcelain work, or that its execution requires an order of talent not possible to one well skilled in other operations of dentistry.

EXTENSIVE PORCELAIN BRIDGES WITH NUMEROUS ATTACHMENTS.*

By A. W. McCandless, D. D. S., Chicago, Ill.

It has been my misfortune recently to have patients who needed large bridges with numerous attachments. It is not necessary for me to go into details before a body of men of your experience as to why I would rather make three bridges with two attachments each than one bridge with a half dozen.

Until recently it has been my custom when making a bridge of more than two abutments to swage up the saddles between each of these abutments separately and solder them one at a time, exercising every possible care and precaution as to accuracy of adaptation in order that there be no warping or drawing, and I have had my own troubles in spite of all, and I presume I am not alone in this. I have followed pretty much along the same lines as when making a large gold bridge with numerous attachments, not attempting to solder the whole case at once, but taking joint by joint until coming to the final solder, I had but one joint to make. Now I think I have found a better way.

I have not had as much trouble with warping in porcelain work as I formerly had in gold work, but the porcelain requires a greater nicety of adaptation, consequently the result of the least change in a bridge made of porcelain is quite as disastrous as a greater change in a gold bridge.

The trouble with the former method has been that the saddles, being made separately, the closeness of adaptation does not obtain as in the plan I will explain to you, as by using a solder composed of seventy-five per cent pure gold and twenty-five per cent pure platinum a very intense heat is required, and if the saddles are not in absolute contact with the whole surface of the caps there is great danger of drawing.

You can readily see that if a cap is moved ever so slightly to one side or the other the post under that cap will be tipped out of line, and the longer the post the more unpleasant the result.

No matter how large the bridge nor how many attachments, I now swage up the saddle from one piece of platinum of twenty-eight gauge.

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* Read before the Northern Illinois Dental Society.

In the first place, of course the caps must all be in place in the mouth, and a plaster impression is taken. After removal of the impression with the abutments in place the caps having been filled with wax to facilitate their removal a model is run up and the impression cut away. The case is now prepared so that a mold in sand can be readily secured just as if you were getting up dies for a plate.

These being prepared, a piece of platinum cut to pattern is easily swaged for the entire case. If through any cause an absolutely perfect adjustment does not result, heat the counter die as warm as can be held in the hand and place in the counter a piece of base plate gutta percha; this will soon become soft; now swage again and the saddle will fit perfectly. This gutta percha idea was evolved from the fertile brain of Dr. Taggart, whom I have seen using it in swaging plates.

Before the final swaging of the saddle it is well to cut a V shaped niche in it at a point over each cap, which process makes the soldering easier. At this point the caps are removed from the model, the wax melted out of them, then they are replaced, the saddle adjusted, the two waxed firmly together with sticky wax, removed from the model and invested in Brophy's investing material. I attribute in no small degree my success in this work to this material. It stands the heat beautifully, without shrinkage or cracking, and it makes one have a very comfortable feeling to see how nicely the case goes back on the model after the soldering is completed. The saddle and caps now united into one piece are placed in the mouth so that the saddle may be closely fitted to the gum tissue upon which it is to rest. It is well to fasten the caps to the roots with a small amount of gutta percha, so that you may know that the relations are not disturbed. A previously prepared "bite" is here inserted into the mouth and the correct articulation obtained. Take another plaster impression of the mouth with the bridge in place, the resultant model is correct and holds the saddle firmly so that it cannot be bent or disturbed by any pressure upon it, and besides one has the feeling of security and confidence that up to date everything is absolutely correct and right. The next step, of course, is to assemble the facings. After securing the case in the investment the wax is boiled out, and the iridio-platinum wire is put into place.

Unless absolutely sure that the articulation cannot be improved upon, the wire is soldered to the saddle, but the pins of the facings are not united to the wire.

It is now an easy matter to remove all from the investment, place the bridge—which now consists of saddle, caps, posts and wire—upon the model, wax up the facings and try in the mouth. In this way the bridge is firmly held in place, with no possibility of its bending or moving out of shape or position.

An opportunity is thus given to study the case in all its details and bearings and to get an arrangement of the teeth that will be the most artistic and natural and pleasing in its effects.

Here is where you get in your deadly work on future kicks, as now is the time for suggestions, objections, et cetera.

Having arrived at something that pleases you and your patient, the warning is given that "If you have anything to say, say it now, or forever after hold your peace."

I wish we were not obliged to make big bridges with numerous attachments. Not that I do not believe in them, for I am convinced by an experience extending over a good many years that the longer the bridge and more numerous the attachments the better it is. The reason, to me, is self-evident. The roots holding a bridge of two attachments may be moved laterally. Those holding a bridge of three attachments, unless on a parallel line, may be moved much less.

A bridge extending around the ridge of the mouth with four or more attachments cannot be moved at all, thus the roots not only hold the bridge but the bridge holds the roots firmly in place, so that they tighten rather than loosen in their sockets.

To my mind the ideal bridge is one with the two cuspids and the two second or third molars for abutments. In the summer of ninety-three I made an upper bridge of gold with porcelain facings and attached it to two cuspid and two third molar roots. Some years later I made a porcelain bridge, extending from the right lower central and lateral roots to the right third molar root of the lower jaw. A year and a half ago I made a left lower porcelain bridge all for the same patient. She saw the possibilities of porcelain; she realized that effects could be obtained that were impossible in a bridge like her upper one. She became dissatisfied with the upper and longed for a porcelain bridge in its place; the only thing that deterred her from having the change made was the expense involved. I did not urge her to have it done, as the bridge was doing good service and looked fairly well, but she made up her mind that she would never be thoroughly happy until she had a porcelain upper, so last March I made one for her. Seven years ago the left upper cuspid was loose in its socket; to-day it is quite firm, as are the others.

When a patient presents who needs a large bridge or bridges, and my judgment tells me that by reason of the conditions that confront me a single bridge with several attachments will be better and more durable than two or three bridges with two attachments each, I feel it is my duty to my patient, my duty to myself and my duty to my profession to do the harder thing.

TWO THOUGHTS ON PROSTHESIS.*

By J. J. Reed, D. D. S., Rockford, Ill.

Those of us who do plate work and make lower plates, especially the full lower, know the difficulty at times where the ridge is narrow, of making satisfactory substitutes that can be used successfully for mastication with any degree of comfort. The difficulty lies in the thin, narrow ridge, and we have all seen cases where the ridge was very thin. The thought was to use small bicuspids and molars very narrow on the grinding surface. The idea is to make them small so the resistance will be less in mastication.

Prosthetic teachers have recommended large bicuspids and molars without discrimination, but which is proper for upper plates which rest on the palate and gums too, or in cases of wide lower ridge. But in cases where the ridge is narrow it should be favored by small grinders which will part the food with more ease than larger ones, and it seems reasonable to suppose that the food will be better masticated and with less injury to the gums than with larger teeth. We have all noticed the absorption of the front upper ridge in cases where there were only the lower incisors, also the continual settling of lower partial sets, so it seems plain that the smaller teeth would be more favorable to the thin lower ridges, but use as large teeth as in your judgment the ridges will stand, as indicated by their being wide or narrow.

The other thought was on articulation in regard to long or short cusps. Where there is scarcely any ridge at all in lower or in upper cases, where the plate is liable to be thrown or lose its suction, use short cusps, or grind them off almost entirely. If we could anchor our plates as immovable as the natural teeth we could use any length of cusp that we wished, but in cases of flat lower ridge the long cusps will interlock, and it requires the wearer to bite exactly right, else it may dislodge the plate. The application of these two thoughts helps the patient to learn the use of the plate quickly and save both patient and dentist annoyance.

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* Read before the Northern Illinois Dental Society.

A PLEA FOR MORE ARTISTIC AND SATISFACTORY RESULTS IN OPERATIVE AND MECHANICAL DENTISTRY.*

By W. H. Taggart, D. D. S., Chicago, Ill.

As this is one of the few societies where we can sit in a circle around the fire with our heels higher than our heads, and chat on any dental subject without a thought of having our good intentions misunderstood, it occurred to me to give a few suggestions to the younger men on a variety of subjects.

In these modern days do not let your patient be the first to suggest to you that a porcelain filling would be a very satisfactory one for her unsightly, badly filled incisor; suggest it yourself, for if you let her suggest it and finally make a success of it she is apt to think she is the originator of the process, and is likely to take away your glory. So, I say, suggest these things to the patient yourself, and you will soon create quite a demand for a class of work which you thought there was no demand for. Do not say to your patient, "they are not practical, I tried one and it was a failure." Haven't you had many a gold filling fail, and where would the most skillful gold filler to-day have been if he had passed verdict on any material or process because he had tried it once? Patients are not fools, and if you cry down an artistic process which has gradually become popular with progressive dentists, you only show your lack of ability, and not superior knowledge, for this work has come to stay, and the sooner you sit up, and look intelligent on the subject the sooner your patients who may never need a porcelain filling will begin to think you are more than an ordinary man in your profession.

But use good judgment as to where you put them, and always be ready to take off your hat to gold as a filling material; in other words, they have at present a limited field, and should be used where the artistic result is paramount to all others, not that they are weak or lacking in saving qualities, but because gold has all the good qualities except the artistic one.

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* Read before the Northern Illinois Dental Society.

Do not try to do this work in a half-hearted way, and when through say, "there, I told you it was no good," for you will never succeed; but go at it with the understanding that it is going to tax the full capacity of your skill and patience.

Another thing I wish to call your attention to. If you have not already started making and using an all porcelain crown do so at once, for you will have to come to it sooner or later, as it is the coming crown, and five years from now you will be ashamed of your gold crown and bridge work. Do not offer trivial excuses for not using them, because that shows more than anything else your lack of ability to make them.

Do not extract the last lower tooth in any mouth if it has any kind of a healthy attachment to the jaw. I would not allow the best dentist in the world to take out my last tooth on the lower jaw. Clasp it properly and you will get the blessing of a grateful patient; extract it and the chances are you will have to make excuses about full lower plates the balance of your days.

Lower partial plates can be made the most satisfactory of any plate worn, and yet how unsatisfactory the majority are, moving up and down at the slightest change of the muscles of the tongue or cheek, and only becoming comfortable after they have been ground so as to be too short to be useful.

Clasp one or two of the lower teeth properly and you may perhaps prevent an intelligent patient from patronizing another dentist who knows his business.

In these clasp plates always have a lug extending on to the grinding surface, so as to prevent the clasp from riding up and down on the tooth to its injury, and also because the patient can bite at least fifty per cent harder, there being no undue stress on the soft tissues.

It is hard enough to hold our patients do the best we can, but don't, for heaven's sake, lose a patient because you can't make a satisfactory lower partial plate.

Remember our desirable patients as a rule are intelligent people. and if you do not master these artistic and practical details they will shortly look for and find some one who will, and you will have lost a good patient solely from your lack of ability.

Set all your banded crowns and bridges with pink base plate gutta percha. Why? First, because it acts as a cushion between the crown and root, and if any undue strain comes it will yield before it will break. It acts to cushion the blow. Second, you can be more uniformly successful, as no haste is necessary, and third, as no haste is necessary, it takes away nearly all of that nerve strain which always accompanies the setting of a crown or bridge with cement. Fourth, the crown or bridge can be taken off at any time within five minutes for repairs or to fill an adjoining tooth; certainly a sufficient number of reasons for at least trying the process, which, if successfully mastered, will wean you forever from setting crowns or bridges with cement.

I have just alluded to these different processes in artistic and practical dentistry, and have left the details to be brought out in discussion, and I hope that something has been said which will start some of you in "the way you long have sought, and mourned because you found it not."

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held January 7, 1901, with Dr. George W. Cook, President, in the Chair.

There was a symposium on "Porcelain Inlay Work." Papers were read as follows:

1. "Matrices and Mode of Preparation," by Dr. W. T. Reeves.
2. "Bodies, Colors, and Shadows," by Dr. W. H. Taggart.
3. "Compound Inlay Cavity Preparation," by Dr. C. N. Thompson.

The discussion was opened on these papers by Dr. C. N. Johnson. Dr. Johnson said: Mr. President—I am somewhat at a loss to know why I should have been selected to open the discussion upon these papers, because I am not as familiar with porcelain inlay work as I am with almost every other department of operative dentistry. I believe, however, that in some of my preconceived ideas in regard to inlay work I must change my opinion. I have been somewhat opposed, on general principles, to porcelain inlay work, except in those cases where it was merely a cavity exposed to view without any attrition brought to bear upon it, and I based my prejudice upon the exhibition of porcelain inlays before a prominent dental society which were supposed to have been made by masters in that department. After a careful examination of those inlays, I must confess I was prejudiced against porcelain inlay work; not only that, but many years ago, when porcelain inlays were first made, some of the most disreputable work I have seen at any place or of any kind was of porcelain inlays as made in those days. However, more recently I have seen porcelain inlay work that I would have been proud to have been the maker of myself. I have seen porcelain inlay work that is going to do good service.

I will not go so far as the essayist did in a remark made by him, that the only limitation to porcelain inlay work was the limitation of the operator himself. I believe there are conditions in the mouth where we can better serve our patients with gold fillings than with inlays of any kind. There are certain forms of cavities which would require for a perfect fitting matrix such a sacrifice of tooth structure as would be unjustifiable. Take an occluso-proximal cavity upon a bicuspid, in which the cavity bucco-lingually is very much wider at the gingival margin than nearer the occlusal surface, reaching around buccally and lingually, following the outline of the gum as we sometimes see them, and with the buccal and lingual walls of the tooth strong, the cavity leading over on the occlusal surface to the opposite pit. There you have a cavity that to perfectly fit a matrix to an inlay would involve too much sacrifice of the buccal and lingual walls. That would be one case where I should not consider an inlay advisable at all. There are other cases in which a perfect gold filling will do better service than an inlay. I may modify my position in that regard, as I have done in others, but at this time that is my impression.

I was very much pleased in regard to the subject of bodies as brought out by Dr. Taggart. I believe more injury has been done to the reputation of inlay work by low fusing bodies than any other one agency. If we know anything about porcelain, we know that low fusing bodies cannot be depended on to retain their color and shade, even if a perfect shade is gained in the first instance. If porcelain inlay work has to be done, I am in favor of higher fusing bodies.

To be brief, I want to refer to a feature of cavity preparation which has been brought out by Dr. Thompson. There is one point that he has not emphasized as much as it should be, especially for beginners in inlay work, and that is the fact that the cavity, no matter where it is, must be so opened at the orifice that there will be no difficulty of slipping the matrix out of position when it is burnished perfectly into place. Those of us who have been preparing cavities for ordinary fillings are too much in the habit, when we begin to prepare them for inlay work, of stopping short of cutting as extensively as we must cut in order to obtain the best results at that portion of the cavity which we call the orifice. Unless the matrix can be passed in and out of the cavity readily, there is danger of warping it and the fit of the inlay is not perfect when completed.

Another feature which is of importance is the setting of these inlays. I have made more gold than porcelain inlays, but this will apply to the setting of porcelain inlays as well as to the setting of gold inlays. The difficulty has been to mix the cement. I have been in the habit of not getting it quite thin enough, so that in setting an inlay, which fitted beautifully, and slipped into the cavity readily, when I came to cement it in place I failed to get the inlay into perfect position on account of the difficulty of forcing the cement out from under it.

There are members present who are more familiar with the subject under discussion than I am, hence I hesitate to take up any more of the time of the society, and it gives me great pleasure to give place to them.

Dr. J. E. Nyman was the next speaker called on. He said: I am placed in a rather embarrassing position, because I did not know until this morning that I was to take part in this discussion. Furthermore, I had some work in hand which necessitated my being at the office to-night, and I was obliged to remain there until half-past eight to complete it. Therefore, I have missed entirely the papers of Drs. Taggart and Thompson, which, I have no doubt, were most excellent.

Dr. Reeves was thoughtful enough to bring over a copy of his paper to me at four o'clock this afternoon, which I looked over during my leisure moments. I shall therefore have to restrict myself to some brief general remarks, not knowing whether they will be contradictory or confirmatory of the positions taken by the two gentlemen whose papers I have not heard.

I noticed that Dr. Reeves in his paper made the statement that of all materials at present available, porcelain was the best for the preservation of the teeth. That statement is too broad and is not quite correct, because, I do not care how perfect the porcelain inlay may be, there is always a line of cement which can be easily detected with a magnifying glass of low power, even if it cannot be seen by the unaided eye. There will be crevices about the porcelain inlay, and all the cements undergo more or less disintegration without the force of mastication being brought to bear upon them. They undergo chemical disintegration in contradistinction to mechanical attrition. Furthermore, the conditions may alter in the mouth so that, while a cement filling would formerly last for a year or two, these fillings may be chemically disintegrated in the same mouth in six months. I have observed this in my own practice, and I find in talking with other dentists that they have had the same experience. In some cases we find almost imperceptible cracks through which microbes can gain entrance, and where they can effect a lodgment they will certainly begin operations, provided the environments of the mouth are not prohibitory, consequently, the inlay, while it may be perfect in all other respects, and fit nicely, as it is possible to fit them, may fail to protect the tooth for any length of time, owing to the conditions of the mouth which will disintegrate the cement which was used to set it. If the same filling had been made of gold, of course we would have had a hermetically sealed joint through which microbes could not enter, and which would not be disintegrated in any way and open up any crevices.

Furthermore, I would ask the gentlemen what they are going to do with compound cavities in which all of the five sulci in a lower molar are slightly affected with caries? A cavity which you would not dare fill with gold without drilling them all out? You would not dare drill these cavities out, as we usually do for a gold filling, and attempt to put a porcelain inlay in there, because you will have to cut them much deeper than we do for gold, and if you cut them deep it will be impossible to adjust the matrix, without tearing it all to pieces. Even if you should succeed in adjusting the matrix, the probabilities are that the shrinking of the porcelain in fusing would pull the arms of the inlay, that would fit in the sulci, all out of place.

Another thing that has given me a great deal of trouble in my own practice in inlay work, which has been largely confined to buccal cavities, such as Dr. Johnson has referred to, are buccal cavities which had a double convex curve, the curvature corresponding to the gingival curve of the gum, and the curvature of the tooth itself, mesio-distally. I have found that the shrinkage of the porcelain in matrices fitted to them will warp the matrices, so that they do not fit at all. The double curvature produces a warpage which I have not been able by manipulation to entirely overcome.

In regard to high and low fusing bodies, there are a number of objections to the low fusing body. The first that occurs to me is that we do not get the same color out of the low fusing body that we do out of the high fusing body. They do not show the same kind of coloring. The colors we obtain from low fusing bodies in ninety-nine cases out of a hundred will not approximate the natural color of the teeth; whereas the colors we get from high fusing bodies, which are probably entirely different in their chemical nature, do approximate, sometimes very closely, the color which we find in the natural tooth. There is another objection to low fusing bodies, and that is, if you carry the temperature the least bit beyond the proper point for fusing, you are apt to ruin them altogether; whereas with a high fusing body you may carry the temperature the same number of seconds beyond the fusing point, so to speak, without materially changing the color.

In regard to large restorations with porcelain; if they are in any of the anterior teeth, I much prefer to devitalize, cut off the tooth and crown it with a porcelain crown. I have never yet seen a large restoration of the anterior teeth which I could not detect as far away as I could see it, which simply gave the appearance of a carious cavity which had been indifferently cleaned out and had been indifferently filled with cement. This is a broad statement, yet I make it because it has been my experience, and not because I want to combat anybody's views. It is almost impossible to approximate the shade of a tooth or its color from the incisal edge to the gingival border in any inlay. If you have a delicate yellow shade at the neck, you probably have not got a delicate blue tint at the cutting edge, and vice versa; if you have a good shade at the cutting edge, the color at the gingival border is wanting, so that it is my practice, instead of attempting to put in a large restoration in any of the anterior teeth, to crown them with porcelain crowns, as I can obtain a far more artistic effect and a far more durable structure.

Dr. L. K. Stewart: I did not expect to say anything on these papers. The difference in the high and low fusing bodies is that the oxides of the metal are used in the higher fusing bodies, and a low fusing flux in the easier fusing bodies.

I am not much of a believer in inlay work except on the labial surfaces of teeth, because I have never seen anything in compound cavities that I thought was very good.

Dr. A. B. Allen: I have in my mouth two centrals, both right and left, in which there are inlays, one that has been in about three years and the other about a year and a half, and up to that time I had as good an operator as I think there is in the city to put in a platinum gold filling. He put it in so well that he destroyed the pulp by malleting, and I know the filling is well placed. Since having those restorations, if we may call them such, in my mouth I have been very much pleased with them. Of course, they are not as artistic, I suppose, as they may be later, when we can match color correctly. As Dr. Taggart has said, porcelain inlay work has its place as well as gold fillings, and if the operator has not the proper judgment to select his case, then he ought to quit. That is all there is to it.

In regard to high and low fusing bodies, anybody who knows anything about porcelain inlay work knows that high fusing bodies are better. Of course, my knowledge on this subject is not extensive, neither is my experience, for I have not been at it more than about six months. It is absolutely essential that the dentist should know when and where to use porcelain inlay work. It has its proper place. But in regard to the bodies, the dentist has to learn to handle them the same as an artist learns to mix his colors. Having watched the restorations in my teeth, have decided that my office was not equipped until I procured a furnace to do the work with.

Dr. J. N. Crouse: My experience with porcelain inlay work dates back about twenty years, but I am not much in favor of this practice. I can fill the same cavity quicker and better with gold, so that it will last longer, preserve more of the tooth and cause the patient less suffering than can be done with an inlay. Porcelain may be used on the labial surface of incisors and cuspids, or even bicuspids, since it presents a more artistic appearance than gold, but it is applicable only in a few cases.

Until we obtain a reliable cement the question of porcelain inlay work can not be satisfactorily settled. I attribute most of the failures of inlays to-day to the fact that the cement either shrinks or else is washed out of the cavity.

Dr. Ames: Inasmuch as I suppose that the talk of Dr. Crouse is the cause of my being called on, I will devote myself to the cement question, and will first pay my respects to what Dr. Nyman had to say about the unreliability of cements. I have never noticed this marked change in environment and tendency to failure of cement fillings in given cases of which he speaks. I have made a very large number of gold inlays and have set them with good, bad and indifferent cements, and have found that some cements which are almost worthless for filling purposes will last very satisfactorily beneath a well-fitted inlay. The only serious failures which I recall were from some cement which I had gotten at in 1892 which I thought good enough to use, but found after setting a few appliances that it would behave as Dr. Crouse speaks of—break down under moisture.

Regarding the remarks of Dr. Crouse, I have to say that in the light of identical experiments made and published in 1899 I am surprised that he should have recounted these experiments made in the dry state as being prejudicial to cement for setting inlays. If he had gone farther and inverted a tube of water or saliva over the filling in his brass or steel tubes he would have found that the cements which contract most in the dry state are the greatest expanders under moisture. My experiments did not tally with his, in the glacial phosphoric acid cements being the greatest shrinkers from the periphery. They shrink to an infinite number of centers which gives porosity. In my experiments such cements as Harvard and Lynton gave the greatest shrinkage at periphery in the dry state and the greatest expansion in the moist. I look on this expansion under moisture in the Harvard as the secret of its holding inlays satisfactorily rather than from any adhesive property or inherent strength.

DR. AMES: Dr. Crouse, your statement was not to that effect. If you have made experiments under moisture and kept them back you were juggling the subject.

DR. J. E. HINKINS: I will say in the beginning that I am not a porcelain crank, but I believe from my observation and work that the success of porcelain inlays or porcelain restoration depends entirely on the question of the cement. I have done a good deal of work along that line, and I believe I have done my work from a chemical standpoint as thoroughly as any man in the profession. I will say frankly, and I want to go on record to the effect that there is no such a thing as the oxyphosphate of zinc. It cannot be found in the literature on chemistry anywhere, but should be phosphate of zinc. If you mix a cement thin to set an inlay, you have an excess of phosphoric acid. When you come to analyze it you will find the phosphoric acid is dissolved and makes the phosphate of zinc porous to the extent that the cement filling is porous. If you mix the cement dry, using an excess of the oxide of zinc, put it into the cavity to set the porcelain inlay, to that extent the oxide of zinc is dissolved, and you have the phosphate of zinc again porous. I have made over a hundred analyses and I have found that the two mixtures depend upon the amount of phosphoric acid you use and the amount of oxide of zinc. I say again, that there is no such thing as oxyphosphate of zinc in chemical literature, and until you get a good cement, or until you know the exact proportion of oxide of zinc and of phosphoric acid you cannot expect your cements to hold your inlays, whether of gold or porcelain. I have made within the last year over two hundred analyses of the different cements. I do not want to be understood as advertising my friend Dr. Ames, but I have found that the Ames cements and the Harvard cements were the two best cements for setting inlays and crowns. On the other hand, the Justi cements are the best for fillings. I am not advertising any cement; but when it comes to porcelain inlays, I think I can accomplish the same results with gold fillings quicker and better.

Dr. B. G. Maercklein, of Milwaukee, Wisconsin: I do not know that I have anything to say particularly on this subject. However, the subject of porcelain inlays is one with which I have had some experience. All of my friends who know me and have heard me speak before to-night are well aware that I have no use for porcelain inlays personally, except as they are called for, or as patients may require them. They have but one place in our curriculum, so to speak, of materials to preserve teeth, and that one place is the artistic effect only, in my estimation, and this can only be said of the anterior teeth, and perhaps especially so of the labial cavities that are found on any of the six upper front teeth. There they have a place, if the porcelain inlay is well made, well fitted, well cemented in place; it will give an artistic effect that can hardly be gotten with gold. Outside of that particular locality, in my estimation, they have no place whatever in the mouth. Dr. Crouse has sounded the right note by saying that we can put in a better piece of work with gold in the back of the mouth than we can with a porcelain inlay. We can do it in less time, with less destruction of the tooth substance, with less pain to the patient, and have positively a more durable result. I have yet to see an inlay put into a compound cavity that did not require more time than to put in a gold filling, with a less satisfactory result. Furthermore, what object is there in putting in a porcelain piece of work in the back part of the mouth which is never exhibited? It is absolutely immaterial what the material is as long as we preserve the teeth in the best possible manner. Patients do not go around with their mouths open exhibiting inlays. They do open their mouths, and are obliged to exhibit them when it concerns their front teeth. But small approximal cavities in front teeth can be better filled and preserved longer with gold fillings than they can with porcelain inlays.

Dr. J. E. Hinkins: In my previous remarks I omitted one important point, which I desire to make now, in regard to the expansion and contraction of cements. I have observed a number of cements that contained over twenty per cent, and some of them as much as forty-five per cent of phosphate of soda. In the cements that contained a large amount of soda I found the expansion and contraction to which Drs. Crouse and Ames have referred, and I attribute that to the efflorescent qualities of the sodium. If a cement contains over thirty-five per cent of phosphate of sodium you will find that if it is put in a dry tube it will shrink and come out. After it is put in water it will expand again, due to the large amount of phosphate of sodium the cement contains.

Dr. Hugo Franz: I had occasion this year, while in Germany, to see a good deal of porcelain inlay work, which was mostly done with low fusing material. My own idea is that a high fusing material is perhaps superior to a low fusing body on the ground of strength and also from the fact that there is such a great difference in the light breaking properties of these artificial substances from those of the natural teeth, much more so than there is in the high fusing inlays, and that is why we get the difference in color which was referred to. Dr. Maercklein laid special stress on the point that the inlay ought only to be put in on account of its appearance. There are a number of cases I have seen where the inlay was not put in for looks but for the comfort of the patient, and that is, in those troublesome cases of cavities in the lower teeth of elderly people, where the teeth are loose. If we put gold fillings into these teeth the patients have to be subjected to much more painful and tedious operations. Take an approximal cavity in a lower incisor, and begin to put in gold, you might do it by hand pressure, and get a filling in there, but, at the same time, you have to drill more and make deeper under-cuts than you have to for porcelain work. With a porcelain filling we do not have to use the same amount of pressure that we do for putting in a gold filling. You mix your cements thinly, put the filling in, press it against the tooth with a strip, and it will stay there nicely for years. I have not put in such fillings myself, but I have simply to take the statements of those operators who have done so, and I believe them to be true. I have seen fillings of that kind put in and they have been retained for ten and twelve years in good shape.

Dr. E. M S. Fernandez: It was not my intention this evening to take part in the discussion on porcelain inlays, as I do not know as much about this work as I would like to. I will say, however, that I believe porcelain work has a broad and important field in dentistry. Porcelain inlay work requires great care and judgment as well as a first-class workman. A distal cavity in a bicuspid I would not consider a proper place for a porcelain inlay.

I believe a platina matrix is made best and easiest from a die and counterdie by the aid of a cement impression. High fusing porcelain is the most reliable material we have for this work. The cements we have are very unadapted for this purpose, but in regard to the consistency of a thinly mixed cement for an inlay we must remember that although the pressure used to force the inlay in place while cementing it in is not great, it is sufficient to drive out the greatest portion of liquid, leaving the cement proportionately thick. I am in hopes that our chemists will be able to give us, before long, a cement much better adapted for this work.

I believe porcelain inlays can be made durable and reliable, and I for one will stand to the battle of porcelain work in dentistry so long as I practice this profession.

Dr. H. J. Goslee: I had not intended to enter into the discussion of this subject, because I am not over-enthusiastic in regard to inlay work; still I believe it has a useful place in dentistry, and that the dentist of to-day must do a certain amount of it where indicated, because of its artistic and esthetic appearance. Moreover, sometimes we may be called upon to insert a filling of this nature aside from its purely esthetic qualities, which instances would be in those conditions where we must consider the comfort of the patient and avoid long, tedious operations.

The matter of burnishing and fitting the matrix several times is important and necessary, and any one who has done this work to any extent can do it in much less than two or three sittings; in fact, it can usually be done accurately and expeditiously in one.

The matter of cements does not enter so largely into the subject, in my opinion, because of the infinitesimal amount exposed to the action of the secretions, which precludes contraction and expansion from entering materially into consideration. In case a dissolution of the cement which anchors the filling should take place, as it sometimes will, the inlay can of course be remounted in a few minutes without trouble, and the tooth is preserved if the patient is informed of the probable occurrence of same.

I have seen beautiful fillings constructed by our own Chicago men and by Dr. Joseph Head, of Philadelphia, and Dr. Fred Capon, of Toronto, which I am sure will do good service, but of course porcelain inlay work has its limitations, and its use I think should be confined principally to the eight anterior teeth. I can conceive of very few indications for porcelain inlays in any of the teeth posterior to the first bicuspid, and should prefer crowning in all very extensive cases.

Dr. Reeves (closing the discussion on his part): In closing the discussion, I will speak on the subject in general. First, I will speak of a cavity in the bicuspid referred to by Dr. Johnson and

Dr. Crouse. There is no simpler cavity. There are few cavities that are any easier for porcelain inlays than such a cavity as that referred to. It is not a matter of cutting down from the occlusal surface of the tooth in order to get the matrix to lift out directly upwards, but it is simply a matter of obtaining space enough in the cavity so that the matrix will lift out in the other direction. I have a number of such inlays where the decay began around the cervical portions of gold fillings until it had extended toward the buccal and lingual walls to a considerable degree, and the occlusal surfaces were strong and solid and were not cut away a particle more than they had been for gold fillings that had been there before. It is simply a matter of room enough to set the inlay from the distal surfaces entirely. Again, there is no work that we do in the mouth of any nature for a patient that is done with so little inconvenience to the patient as the preparation of a cavity for a porcelain inlay. You do not have to cut away extensive margins. You do not have to cut any more than to remove the decay which you have to do for any kind of filling you put in. You require nothing for retention. If you put a gold filling in any of these disto-occlusal cavities in molars or bicuspids, you would have an extensive amount of surface to cut to retain the gold filling. You do not do that for an inlay. I have any number of cases that if you had to cut them to put in a gold filling it would have been sure death to the tooth inside of a year, on account of the extensive cutting you would have to do to hold the gold filling in place. These teeth are doing splendidly without trouble to the patient. I have in mind a young lady in whose mouth I put one of the first inlays I made. The work was done in March, 1894. It was an extensive distal cavity in a bicuspid. It would have been impossible to have put a gold filling in there and have the tooth remain alive. Cements do not do well in her mouth, and I suggested that we try inlay as an experiment. That inlay is there to-day, doing good service, and is in as perfect condition as the day it was set. In the same mouth since then there has been repeated recurrence of decay at the cervical margins and the cervical, buccal and lingual borders of gold fillings, and in all cases where I have taken out gold fillings and have put inlays in her mouth the work has been eminently satisfactory to her.

In regard to cavities in the occlusal surfaces of molars, where there were five sulci that had to be cut out, which was referred to by one of the speakers, and the difficulty of putting an inlay there, I will say that I was speaking to a gentleman this evening into whose mouth I put just such an inlay. Five sulci were cut out as extensively as you would cut them out for a gold filling; the matrix was burnished, and there is no place about that inlay where there is any lack of fit in the margins.

As has been stated, I do not think cements enter into the matter as an objection to inlays. When we get a cement that is liquid, we will have an ideal means of setting inlays. However, cements do hold and the inlays stay there. I have not had to exceed five inlays that have had to be reset on account of dislodgment. I have this to say, in connection with inlays: I have not a single case where there has been a recurrence of decay around any inlay I have put in the mouth in the seven years during which I have put in inlays. In not a single case have the inlays had to be removed on account of recurrence of decay. I do not think there is a person present who can make such a statement in connection with gold fillings. What the reason is I do not know.

Dr. Crouse: Do you mean to say that decay will not take place beyond a porcelain inlay?

Dr. Reeves: I do not say that it will not, but it has not done so. I know there are quite a number of other gentlemen here who can make the same statement in connection with inlays. I think it may be due to the fact that the margins are not injured in any way in connection with putting in the inlay.

In connection with a buccal cavity with double curvature, that is a difficult cavity to burnish in a matrix, but it can be successfully done.

Dr. Nyman: How are you going to work to avoid warpage?

Dr. Reeves: I had hoped there would be a case in which to show such an inlay, set about two months ago. It was in a bicuspid that extended from the point of contact on one side approximally, down and around the gingival margin, and up to the point of contact on the opposite side. Dr. Girling and some others saw it after it was set.

Dr. Nyman: How would you proceed to avoid warpage?

Dr. Reeves: One feature in connection with avoiding warpage is to use two or three or more different kinds of bodies in the baking of the inlay. I begin to bake the inlay with Close body, carry it a fair distance, then use a body that fuses at a little lower degree of heat, using it principally for the color effect, using a deeper color there than I expected to have for the finish, and over that what you might call the enamel color, through which the other color reflects and gives a translucent effect, and produces the effect that you want, with a blue tint in the tooth and a yellow effect towards the neck. One can obtain almost perfection in that way by the use of two or three different bodies, none of them being carried to a glazed finish. I think therein lies one feature of avoiding the warpage of the matrix together with the other method of using some means of holding it firmly in the cavity for the last burnishing. I spoke of the fact that I did not consider it necessary to bake any porcelain and then carry the matrix to the tooth for burnishing of the margins. You can accomplish it all before you begin to bake the porcelain.

In the discussion reference was made to the point that there was no place for inlays except in the anterior teeth. I think the comfort of the patient is one of the best features in connection with inlay work, and you can make inlays for any of the molars in any place. There are so few cavities for which you cannot make inlays that they can be numbered on the fingers of one hand.

There is one thing that will convince you of the durability of an inlay, and it is this: The first gold filling you have that bites out, that is still perfect in its margins, if you will take that filling, whether it is an approximal filling in a molar or a bicuspid, or an anterior tooth that comes to the cutting edge, and scratch it on the toothwords surface with a fissure bur, set into the tooth with cement as an inlay, the filling will stay there and do better service than it did when put in there originally.

What gave me the most encouragement in connection with porcelain inlays was a gold filling that I set in this way for a patient in 1891. It was in a lateral that involved one-half of the cutting edge. She bit the filling out and came in expecting to go away for the summer the next day. I was very busy at the time and told her to come back, that I could put in something temporarily that would tide her over until she returned from her summer trip. In the meantime the thought came to me that inlays were made and set, and that I might set the filling back into the cavity as an inlay. I did so, expecting that when she returned it would of necessity have to be replaced in some other way. Now, that filling is there to-day just as firm as it ever was, and it has given me more encouragement as to the durability of cements in setting inlays than any other one thing.

Dr. Taggart (closing the discussion on his part): I have a few words more to say in regard to the margins in one of these approximo-incisal cavities extending well across the cutting edge. Instead of making the margin very regular, extending from the gum line to the cutting edge, I make a curved line of it. A straight line restored with a porcelain inlay will always be conspicuous, but if we take the line and give it a wavy shape, instead of a direct cut, we will get a very much better artistic effect, so much so that there will be hardly any comparison between the two.

One of the most satisfactory cases I have ever had, one which gave me as much satisfaction as anything I have ever done in connection with porcelain work, was to put an approximal restoration in a lateral incisor, extending from the gum margin, taking in two-thirds of the cutting edge of the lateral incisor, in a live tooth. That one-third of the cutting edge was not enough to make any kind of gold filling and still retain the pulp in a live condition unless one made an unsightly gold tooth of it. I made the restoration with porcelain, and when it was all finished and cemented to its place it was off-color. I said to the patient that the porcelain inlay was off-color, and that while I had put my time on it and was not satisfied with it, it was the best thing I could do at that time. I also said that I would put in another filling for her for nothing at some future time. In the course of three days it was found that this inlay had come out, and she showed me the inlay. She had it in her hand. I said to her, "This is the best I can do; we will cement it in again." I did so, and it remained there for three years, and this fall, as she was going to Europe to stay for a year, she came in and asked if I could make her tooth look better than it did. I told her yes; I could put in a more up-to-date filling. I tried to take that filling out, and I had a very hard time in doing so. I could take a gold filling out much easier than I could that inlay. I pounded on it repeatedly. I thought I had a pin in the matrix and had baked it into the porcelain, but when it came out, instead of having a pin in it, it had absolutely none, but there was simply a little groove I had put on the back of it with a diamond disk. This case ought to give you some confidence in the strength of these inlays.

Referring to the experiments of Dr. Crouse, considering the unscientific way in which he went about them, I do not think they ought to be mentioned in this discussion. His experiments are unscientific in this sense, that the conditions he is trying to combat are never met with in the mouth. The same thing can be done with gold as with cement fillings when placed in tubes. Pack a gold filling in a smooth tube, let me hold it in my hand at the temperature of the body, and the tube will expand so that the gold plug can be blown out. This shows that we do not meet with such conditions in the mouth.

Dr. Maercklein said that people are not running around with their mouths open exhibiting inlay fillings. That is true, but lots and lots of sensible people go around with their mouths closed trying to avoid showing their gold fillings.

Dr. Johnson, in opposing porcelain inlay fillings, picked out an extreme case, which would not be suitable for a porcelain inlay, and any man of judgment would not attempt to put a gold filling in a tooth which ought to be filled with amalgam. We must use judgment in our work and not misplace porcelain fillings. I remember the time, and it has not been so many years ago, when there was just as much opposition manifested toward porcelain crowns as there is to-day against porcelain inlays. The time will come when a decided change will take place in regard to this matter, in proportion as our skill develops, and we will find the skilful men of to-day will be surpassed by those in years to come. Some of the graduates to-day can put in fillings with a degree of skill that the old-time practitioners could not begin to do, because of the improved methods and improvements in cavity preparation. When the time comes for porcelain inlays to be used extensively dentists will develop skill the same as we have in the use of porcelain crowns. I do not think we can find many dentists to-day who object to porcelain crowns. Of course, there are some who object to porcelain bridges, but they are gradually being weaned away from their old notions, and as a finishing remark will say to those opposed to porcelain work, don't say too much against it, and you won't have to take back so much in the future.

Dr. C. N. Thompson (closing discussion): Just an incident or two of office practice. I saw a few weeks ago two porcelain fillings in perfect order that were inserted a little more than twelve years ago. There was a slight disintegration of the cement at the margin, but not sufficient to allow recurrence of decay. The gold fillings in the same mouth that were inserted at the same time and later were in very poor condition. I also saw a gold filling recently that eight years ago came out and was then cemented back into its place, grooves having been cut in the sides of filling and cavity for cement anchorage. It was in perfect order.

The only necessity for easy insertion of a perfect porcelain filling in a mesial cavity, such as Dr. Johnson mentioned, would be plenty of space or separation to allow for lifting the matrix out approximally—inserting the filling from the same direction.

The greatest help we have had recently in inlay work is the method introduced by Dr. Reeves of using rubber dam or any similar substance for holding the matrix to cavity during the final burnishing.

The shrinkage spoken of by Dr. Nyman is, I believe, due to having too much body in the matrix at first baking, over fusing it and using only one kind of porcelain.

The advantage of porcelain over gold as a filling material is color, ease for the patient and a perfect tolerance in sensitive cavities.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel, Jan. 22, 1901, with Dr. L. L. Davis in the chair.

Dr. C. N. Johnson read a paper entitled "The Office Assistant."

DISCUSSION.

Dr. James McManus, of Hartford, Conn., was asked to open the discussion. He said: Mr. President and Gentlemen.—It was an unexpected pleasure to be invited here to-night, but I am very thankful indeed to my friend who invited me here. For some years past it has been a delight to me to read anything from the pen of the essayist, but a greater delight to see him and listen to his words, even if what he says should bewilder me. I can only hope to see and to have such an ideal office assistant as the essayist portrays. It has been said that the saints are all dead; that we have no living saints. I hardly think there is a woman in the East, at least, who would fill the bill. as the Doctor expresses it to us this evening. He is asking a great deal of an assistant, and I think he is likewise asking a great deal of the operator. Possibly I am speaking now from the standpoint of an old fogy. If I had been brought up in Chicago perhaps I should be doing things on a more rapid and grand scale. But I have never seen that kind of assistant that Dr. Johnson speaks of, although I have seen several good ones. I have never had one myself because I have been fortunate to have two boys of my own in the office who have been of great assistance to me for many years past. Personally, I would like to have an assistant who could give me one-half the satisfaction that Dr. Johnson's assistant gives to him, and one who possesses one-half of the qualifications that he enumerates. In New England the training of assistants will have to be different from what it has been in the past before we can secure such ideal assistants. Every statement that Dr. Johnson has made is a beautiful one from his standpoint. We would all like to have such an assistant, and possibly before the first twenty-five years of the present century we may develop more ideal assistants, but I think it will take a little while to do it.

Dr. John S. Burnett, of Uruguay, South America, was asked to say a few words on Dr. Johnson's paper. He said: I have had very little experience with lady assistants. The services of such an ideal assistant as Dr. Johnson has described are to be valued very highly. The services of a young lady assistant can be utilized to great advantage in the office of a dentist in keeping his books, making the appointments, and in doing many other things that come up I hope some day to be able to secure the services of such an assistant as has been mentioned, which is necessary to every operator.

Dr. C. R. Taylor, of Streator, Ill.: I deem it a privilege to be here this evening. I am not at all surprised at the paper which has been presented to us, because it is characteristic of Dr. Johnson. It is clean-cut and to the point. Somebody has said that artists are born and not made. But this kind of artist, the office assistant, is made, and not born. Our assistants are what we make them. I am thankful to the essayist for his excellent paper, because it gives me no excuse not to have a better assistant than I do have. My assistant is not worth as much to me as she ought to be, because I have not demanded it of her. She is capable and equal to the occasion if I would only teach her. A good office assistant can protect the dentist from being frequently interrupted by people who simply come in and discuss matters that do not pertain to his active everyday work. Such people not only take the valuable time of the dentist, but distract him from the efforts he is making in caring for his patient. We owe it to our patients as well as to ourselves to be protected from these intruders. I do not care to discuss the paper further, but wish to thank Dr. Johnson for it.

Dr. Charles McManus, of Hartford, Conn.: It would ill-become me to attempt to discuss the very excellent paper that has been presented by Dr. Johnson, but I rise principally to express the great pleasure I have had in being here this evening. It seems to me, my father's slightly pessimistic views in regard to office assistants are due very largely to the fact that he has labored under the disadvantage of having such poor assistants.

I have intensely enjoyed the paper this evening, as it is the finest presentation we have yet had as to the conduct of the twentieth century office. It is the nicest, pleasantest and best expression of the real position of woman in dentistry.

Dr. W. H. Taggart: Dr. Johnson, in his remarks preliminary to the reading of his paper, expressed himself to the effect that he ought to make an excuse to the visiting guests for inflicting upon them such a paper, but as most of the guests have been imposed upon in this pleasant way by Dr. Johnson for a good many years, we can stand it. He has expressed my sentiments exactly in regard to the office assistant. I have had two office assistants since I have been in Chicago, extending over a period of nine years, and both of them have been such ideal assistants as he referred to. One of them was with me for nearly six years, the other for three years. During a vacation extending over five weeks, which the first girl who was with me took, I had thirteen girls in that short period of time. This shows that it is more difficult to secure the services of a good office assistant than some people imagine. Dr. Taylor has made the remark that artists are born, not made. I think some of the assistants that I have had should have been made, not born. It is an exceedingly difficult problem for a hard-working dentist to educate a new girl as an assistant. I regard one of the hardest parts in this problem to get the right kind of ability to begin with: the act of teaching them the special things is then an easy matter. I do not know where to go to find the kind Dr. Johnson speaks of. I have been willing to pay good wages, and out of twenty different ones I have had I have only been able to select two, so that if there is any place where we can secure good assistants it will be a godsend to some of us.

Dr. W. V-B. Ames: I believe that the training of an office assistant largely depends upon the dentist himself. Some dentists are peculiarly fitted for getting much out of their assistants, while others unhappily are not, and I belong to the latter class. It is largely a matter of patience either with a male assistant or a young woman assistant. As for myself, I fear that I have not the amount of patience required to enable one to train an assistant to the degree of perfection mentioned by the essayist; and yet I cannot get along without them.

I am grateful to Dr. Johnson for so thoroughly covering this subject, as when it is in print, and I am so unfortunate as to be in the throes of training a new assistant, I can use this as a code to be lived up to.

Dr. E. A. Royce: This is a subject that I do not know very much about, as it has been my good fortune to have the same lady assistant for the last twelve years. She knows what she has to do, and does it. If Dr. Johnson were to train a new office assistant, he would find it would take him several years to do so.

There is one phase of the office assistant question which I have wondered at not a little, and that is the class of assistants that are employed. I find that quite a number of the assistants who have been and are working for the different dentists are doing so for pin money. In other words, it is not absolutely necessary for those people to work. They really should be at home, so as to permit those who need money more to do the work in their places, and from the impressions I have had I have been led to believe that they do not make the best assistants. The first requisite required with me of a dental assistant is absolute honesty. I do not want to count the change when an assistant hands me money; I do not want to take a second look at a roll of bills. If I go to my office in the morning and my assistant is not there, I know that someone is sick, either my assistant or some of her immediate relatives, so that she cannot leave home. Aside from what I have said, I think Dr. Johnson has given us very fully what is required of a well-trained assistant.

Dr. E. R. Carpenter: I have probably had as much trouble in securing a good office assistant as many other dentists, and when I began the practice of dentistry the great trouble was that I could not get an intelligent girl. I soon found out that the reason why I could not get an intelligent girl was because I did not pay enough, and after going through the tedious process of trying to train one assistant and then another I finally made up my mind that I did not want any girl in my employ who was simply living at home and working down town for pin money. I therefore selected an honest, industrious girl, and told her the pros and cons as near as I could of my work, and said that much would depend upon her as to what her future would be in my office. I said to her that if she earned $4.00

a week, she would get it; that if she earned $15.00 a week, she would likewise get it. I said to her, just as soon as you learn a few of the minor details of the office I want you to master something else. I took that young woman, coached her, called her attention to the slips she was in the habit of making in her grammar, etc., and she appreciated it. At the end of six months I gave her $5.00 a week; at the end of a year I increased her salary to $6.00. And she has gone along from year to year until at present she gets $8.00 a week. She keeps my books, attends to my banking account, answers the telephone, takes care of my appointment book, and does many of the things that Dr. Johnson has enumerated. The rest of the work devolves upon me. Were we to follow the advice of Dr. Johnson, the office assistant should do many things that we ourselves do. In my early work I did not have the nerve to stand up and say I cannot go to the telephone; I can not see Mrs. Jones or Mr. Williams; make the appointment and find out what their business is. I felt that I must attend to all that myself. I know there are a great many men in our profession who do many things that they have no business to do. Their assistants should attend to it. These dentists keep their own books, but they should save their strength for something else.

Dr. A. O. Hunt: I do not know that I have very much to say on this subject. I was very much interested in the paper, but an efficient assistant depends very largely upon the employer or dentist. Then, another element that enters into it is the tastes of the assistants themselves. A great many young women in filling such positions desire to render all the service that is required of them, but at the same time they have little interest to learn and no business qualifications. They have no taste for business affairs, and what is still more, they do not like to work. They have not been brought up to work. I do not quite agree with some of the speakers as to that class of women whom we select as assistants. I think, perhaps, our best assistants come from those who have had the best home training, who have had responsibilities put on them. They need to work for money, not exactly for pin money, but for their own personal living, the other members of the family being able to look out for themselves. My experience has not been extensive with a great number of office assistants. I have been fortunate enough to have had one for fifteen years, and another one for ten years. But since I have been in Chicago my experience has not been so favorable. I have had more than that number of assistants. I have recently secured the services of an assistant who comes from a family such as I have referred to, where the other members of the family are looking out for themselves. She likes the particular kind of work in a dental office. She learns it readily, and she is quite willing to learn. An office assistant must be neat naturally. We cannot educate them in that respect, if it is not natural. If it takes eight or ten years to train an office assistant, I would rather keep on trying seven or eight or a dozen until I found one who would suit me. I would not like to spend eight years to train her. I believe such assistants can be had, although not readily.

Dr. J. G. Reid: Dr. Johnson has drawn a beautiful picture of the office assistant, and there is no question but what an assistant in the office is as much an integral part of it as is the dental engine. So far as the training of an assistant to meet the desires and wants of the dentist is concerned, perhaps I have been fortunate in being able to secure assistants who could grasp what I intended quickly, or it may have been natural adaptation. I have not had many assistants during my professional life, only three as long as I have employed assistants. The assistant who has been with me now for five years is an intelligent girl. She reads a good deal. When it comes to determining what a person wants when he comes into the office, she comes very nearly hitting the nail on the head every time. She generally knows whether an individual who enters the office wants to sell a book or something else. It has not taken very much education on my part for her to tell that. She knows pretty nearly whether a man comes to annoy me with some business that is not strictly professional, or whether he comes for the purpose of making an appointment with me. It has not been difficult for me to train her because it is natural to the girl. As to my friends who come to the office, she knows most of them and does not have much to say. She knows that I will see them if I can. But people who come to the office to ask questions she knows very well. I have a certain time for seeing such people, and it is half-past four o'clock, when I discuss their troubles, trials and tribulations with them.

The greatest comfort I get from an assistant is her ability to do me service at the chair. Another very important feature of an assistant is her ability to entertain people who may sometimes have to wait for a considerable time, because we cannot always meet our engagements promptly. They may have to wait five or ten minutes, and an assistant of the proper kind is one who is capable of entertaining your patients while they are waiting for you. It takes a long time to train an office assistant so as to be invaluable to you; but, as Dr. Taylor has said, there are some who can grasp what you want at the impulse of the moment. They are able to anticipate you, and I have been fortunate enough to have that kind of girl in my employ for the last four or five years.

Dr. Carpenter referred to the point of the office assistant keeping his books. I keep my own books and take care of my own business. When it comes to bookkeeping, I think I can keep my books with as much satisfaction as to entrust it to somebody else. I presume the office assistant I have could keep my books if I instructed her how to do it. But I like to finger my own books to see what is going on, to tell whether I am getting ahead or falling behind.

Dr. J. W. Wassall: I have been very much interested in the paper, and Dr. Johnson has pictured to us the ideal assistant. I think those of us living in Chicago concede him the best trainer of dental assistants we have. As evidence of this I will relate an experience I had not long since. A year ago last fall I secured a young woman to take the place of a student returning to college for his second course. She remained with me through the college term, at the end of which time the student came back, and I obtained for her another position in the office of a friend of mine. Two months afterwards I asked him how she was getting on, and he said, after having had her under the tutelage of Alice (Dr. Johnson's assistant) for four or five days, he now regarded her the best assistant he had ever had. It is absurd for the dentist to spend his time in attending to details which may be performed for him. All of the things the essayist has enumerated, and which are constantly cropping up, as well as many others, take up as much time as the more important things, such as adjusting the rubber dam, preparing the cavity, scaling a pyorrhoea pocket, etc.

One gentleman in the discussion wished to know where he could get good, intelligent girls. I would suggest Hull House, the Young Women's Christian Association and the Training Schools for Nurses as excellent sources.

Dr. A. W. Harlan: The question of office assistants is one that I do not remember to have ever heard discussed before to-night, and I never read but one discussion on it, which was published some years ago in the *International Dental Journal*. While I listened to the reading of Dr. Johnson's paper, I revolved in my mind the years that I have been in practice, and one of the things that struck me in doing that was this: I have never had an office assistant leave me voluntarily, and there is no man here, or anywhere else, who has ever employed one of my assistants after she has left me, so far as I know. They have either been married or gone into some other occupation. What I want of an office assistant is one who can keep books, write letters, talk to people, entertain them, and assist me and be absolutely loyal to me and believe in me. When you get an assistant of that kind she will do anything that is needful about the office. At the present time I have a boy in my office who has been with me for eight years; I have a girl who has not been with me very long, but she was in another office between eleven and twelve years, and I have another girl who is now serving her seventh or eighth year, and any one of them is competent to do all the various things about the office from getting impression materials ready, to malleting, sterilizing instruments, attending to the telephone, etc. I do not employ office assistants for the purpose of going out and collecting bills, but to do the things I do not wish to burden my mind with, and when I get ready to leave the office in the afternoon I leave everything just where it has been all day. When I come back the next morning everything is ready for me to go to work. I have been in the habit of increasing the compensation of my assistants from time to time, when I found they were capable, willing and efficient, and I have always been willing to give them a reasonable amount of recreation, and whenever they go away on a vacation I pay them their salaries as if they were working. If I am going away myself for a day or two, I give them a day or two for recreation and expect them not to abuse that privilege.

Some of the details brought out in Dr. Johnson's paper are not required of the office assistant, but I always expect to have an assistant in the operating room, and perhaps two. Perhaps, the everyday duties of my life may be a little different from those of anyone else in the room, because they require a different kind of assistance. But I have found, as Dr. Wassall has said, that sixth and eighth grade pupils are not suitable for the assistants of dentists, as a rule. On the other hand, I have employed at different times women whose ages varied from eighteen to thirty or forty, who had received a high school education, others who were graduates of academies and seminaries, and sometimes the more highly educated they were the more inefficient. I had at one time one of the most brilliant women in the city of Chicago as an assistant. She was a graduate of Notre Dame. She knew languages, and still she was an inefficient assistant. There are some things about operations that I prefer to do myself rather than to entrust to an assistant, because I have trained myself to be more dependent upon the fingers of my two hands than on the two hands of somebody else. I insist upon fidelity, promptness, cleanliness and honesty. In all of the years I have been in practice in Chicago, now being thirty years or more, I have never had but one dishonest person that I knew of in my office, and of course I promptly discharged her when I found that she was not honest. I had one girl in my office for nineteen years, another one between seven and eight years, as I have always employed more than one, and have never been without an efficient assistant while I was training another. The ability to entertain, to make appointments, to use judgment, to answer things properly and promptly, is one of the things every assistant should possess. The question of compensation is one that has never troubled me. I have never had any assistant strike for higher wages, because I have anticipated that. I have paid as high as $20.00 a week for a lady assistant in my office, and while I have not now anyone to whom I am paying that much, if I had one capable of earning it I would pay it to her. As it is now, the responsibility is divided between two or three of my assistants. Perhaps the next assistant I shall have will be a stenographer. But an assistant can do a great deal to help the dentist, and the person who may be a most ideal assistant for Dr. Wassall or for Dr. Johnson might not suit me at all, because their habit of thinking and of doing things may be totally different from mine, and still we may aim at the same results.

Dr. Truman W. Brophy: While Dr. Harlan was speaking, I recalled a remark made by the late Dr. Swasey. One evening, during a conversation at his house on the subject of assistants and of operating rooms, Dr. Harlan was explaining, as he has done this evening, how to manage an operating room and his assistants, and he made the statement that he always kept his operating room door closed. Dr. Swasey said, with a twinkle in his eyes, "That is not the case with me. I always leave my operating room door wide open, so that anybody can look in or come in, if they see fit." It is absolutely necessary that the dentist should have his operating room door closed, in order to keep out those who would approach him about matters that do not concern him professionally. One of the best bits of business advice I ever received was from a gentleman who died last year, Mr. Albert Cone, a partner of Mr. W. W. Kimball, who is in the musical instrument business. He used to come to my office at regular intervals. It is my custom to have people who call state their business to my assistant, or to make an appointment to see me at some time when it is to me convenient. The urgency of two particular persons induced me to see them that morning. I did, and found they wanted to present matters that did not interest me at all. After I told Mr. Cone how these men had consumed time which belonged to him he said to me: "I want to make a suggestion that will be a great help to you in business matters. Whenever anybody comes to see you and you think they have nothing to present which you care anything about, instruct your assistant to ask that person to reduce what he may have to say to writing, and then look it over at your leisure, and you will find by adopting that plan you will get rid of a lot of people you do not want to be bothered with." Ever since I have done that in all cases when people were persistent in demanding an audience, and it has worked like a charm. Among those people who call to see dentists is the man who wants to insure his life, another who wants to sell a book, another who wants to make up a biography, etc., and this class of people will hang around the halls and endeavor to catch you in the elevators, etc. The suggestion of Mr. Cone is one we may make use of to advantage in our affairs.

Speaking of assistants, I have had one who has been with me for twelve years, who attends to my correspondence, and other business matters. I have another one who has been with me for five years, and who knows how to handle the people that I have just mentioned.

I believe there is considerable use for assistants in England; and I think it is the case in France, and perhaps in Germany. I would rather spend a whole day in the hardest kind of drudgery in my profession than to make out a bill and hand it to anybody. I cannot do it. I dislike to consider the question of compensation, and the assistant who can render that service is of very great value to me. Patients should be referred to the assistant or to the bookkeeper, or whoever does that part of the office work, for the adjustment of their bills. If a patient wishes to discuss a bill, let him do so with the assistant, who is familiar with the fees charged for this and that service. In England and France, in most all of the European cities, the assistant transacts all business, all the financial matters with the patient, and that is a great relief to the dentist.

With reference to assistants looking after the details of an office and seeing that everything is properly done, I am confident that if I could use an assistant to the advantage that Dr. Johnson does it would save me an immense amount of valuable time. I do not know how to use an assistant the way he does. The general work of an assistant is never outlined properly by the dentist who employs her. Anyone who is so efficient as Dr. Johnson is in the management of his affairs would find a very good occupation in having a school for training assistants on the same basis as a training school for nurses. I do not know how soon this will be brought about, but it is possible from the scheme which Dr. Johnson has developed this evening.

Dr. Johnson (closing the discussion): I am very grateful indeed for the reception and free discussion of my paper. I think I ought, in justice to my office assistant, to pay her a public tribute. I have not had anything in my whole professional career that has been so great a source of satisfaction to me as the assistance of that young lady. She is more ideal than I have pictured in my paper. From what I have seen of other young ladies in dental offices, I believe dentists could get a good deal more out of their assistants in the way of service at the chair than they are in the habit of doing. By having a well-trained assistant the dentist can serve his patient better, more effectively, and with more satisfaction, with less wear and tear by one-half, than the average man is doing to-day. I do not claim to be able to do any more than the average man, but I am able to accomplish a given operation in one-half the time, by reason of the efficient service of that little girl than would be possible without her assistance. She not only deprives me of the little worries, but she is effective in rendering actual service to the patient.

I do not know that I can say anything more than to express my appreciation, more particularly to the guests of the evening, for what they have said. We feel complimented in having them with us. I am glad to have brought the subject up, believing that it will be of actual service to dentists all over the country if it is brought before them.

SEVENTEENTH ANNUAL MEETING OF THE MINNESOTA STATE DENTAL ASSOCIATION, HELD AT MINNEAPOLIS, SEPTEMBER 3, 4, 5, 1900.

President's address, see page 857, vol. XIV.

DISCUSSION.

Dr. H. M. Reid: I will not attempt to discuss this entire paper. I have read it over before and have again heard it read to-day. I simply want to speak a few words on the last clause of his paper regarding the matter of education. It is a subject in which I have been greatly interested for many years. I feel that there is no one thing that should be of greater interest to the general public than this matter of oral hygiene and dental education. As you all know, perhaps, this matter has been brought before the different societies all over the country, and there has been one plan and another suggested in this matter. The plan has been talked of, of bringing this matter before the public through the medium of the press, having some one who would write articles on the subject that would be plain and easily understood by the readers of our daily press and reach the public in that manner. So far as my knowledge goes that plan has been of no effect whatever. Now, as the saying, "As the twig is bent the tree is inclined," I look upon our public schools as the proper place to inculcate this teaching, which we as a society and as a profession are peculiarly fitted for. While I have met in my practice, parents who were enough interested in the teeth of their children as to come and obtain instruction and teach their children from infancy to take proper care of their teeth, there are but few who do it. If we cannot reach them all in that way we can reach them better through our public schools than in any other way.

I am desirous of having this matter pushed for the reason that I would like to see this western country the pioneer in this movement, and I believe with the proper effort put forth it can be carried through. As you heard the President mention in his address he was asked by the principal of one of our city schools to make an address for the purpose of educating the children on that point. He declined to do it for the simple reason that we are not broad-minded enough; he thought he would be accused of advertising himself if he should do such a thing. He thought it would be regarded by the profession as not in the interest of the general public, but simply as a scheme to advertise himself. We want to be more broad-minded. Let those who are fit to do so go before the schools, but we have first as a State society got to make a move; we have got to shut off this feeling that the individual who would do it is simply doing it as a matter of self-advertising. Now, gentlemen, are we not broad-minded enough to throw aside a feeling of that kind, or are we too small, too contracted, too little, too contemptible and mean to permit a thing of that kind to be done?

The doctor says he has written to different educators in regard to the matter, and has taken it up with Dr. Jordan of our city schools, but I would take it further than that in a way that is possible and perhaps better; I would like to see the subject introduced in our kindergartens. I go back to the same old saying, "As the twig is bent the tree's inclined," that is the place to begin. Before this meeting adjourns I want to see some definite action in this matter. I think it is well enough to start this thing by the appointment of a committee, and I am satisfied from what Dr. Murray has said that it will not be a difficult matter to get the educators in the city and the State generally interested, and if it is once started there is no telling, in my mind, the far-reaching benefits that may result from this one thing.

In regard to other points mentioned in the President's paper I will leave them to be discussed by some one else, as I do not wish to take up any more time, but this point of the education of the public I have been much interested in for years, and I believe this society should make it a field to work in in the direction indicated in the address of our President.

Rev. Clarence Swift: I feel like a fish out of water to try to address a dental association on such a subject as this. I am unable to discuss the technical features of the subject. I was quite a little surprised to find the President in his paper, before a body which I supposed would be strictly professional in all its discussions, broaching a matter of such general interest as that of educating the children in our public schools in regard to the care of the teeth, and I was delighted to discover what I long have known with my personal acquaintance among the profession of Minneapolis and what is corroborated by the discussion in your meeting here.

The mayor's reference to the old time dentist made me recall an incident that happened in my experience. In the place where I was preaching I was one day in the office of a dentist who was also practicing medicine. A farmer's boy came in who had an aching tooth. I remember the doctor made the boy sit on the floor and I took his head between my knees and held it firmly while the doctor pulled the tooth. That was the then country practice of dentistry.

I think this preventive feature is a good thing. That is the point the President had in mind in regard to the public schools. A few months since I had a talk with one of the principals of the public schools here (I do not know whether it was in the same school he had in mind), and he has planned out a series of talks for the different grades by men of different walks in life. I had the pleasure of giving a talk, and there was no professional hesitation on my part, along the line of moral instruction, and she had planned different talks on subjects that would interest and instruct the children. If we can take hold of this subject and turn it back into the kindergarten, beginning with the beginning, you will have something that is going to be of inestimable value to the children, even if they do take such good care of their teeth that we do not need so many dentists. I think that is a splendid bit of unselfishness to take care of their teeth so they do not have to go to a dentist. I admire the spirit of the paper and also of the Treasurer's remarks. I do not know whether the preachers are so unselfish. They are doing all they can by preaching and influence to rid the world of sin, and when the world is rid of sin there will be no further use for the preacher.

I stand with you in this matter. I have been interested in this matter on general principles, because it brings to me the thought of the relation of the material universe to the spiritual universe, the thought that the laws of nature are the laws of God, and when in your workshop, in your office, in your scientific investigation you are discovering the laws of the human body you are in a very true sense of the word discovering some of the laws of God as they have to do with human comfort and human happiness, and those laws of the material universe are the laws of God. We find that a violation of that law makes suffering, makes discomfort, but the same divine being who gave us that law has a law of healing. A finger is put into the fire and is burned. It is the law that it should suffer, but this same Nature has its law of healing, the suffering is alleviated and the discomfort ceases.

It is just so in your work. I want to express my hearty commendation of the idea contained in this paper, the thought of preventive dentistry. That is what we are after now, the law of prevention, and the sooner we can begin with it the more easy prevention is going to be. I am very glad to meet the members of this association.

DR. T. E. WEEKS: You know I am always glad to talk about matters that have taken so much of the thought and energy of my life. All the energy I possess has been devoted to the education of these young men who are about us, yet I have not entirely forgotten the matter presented by our President. It seems to me there is no fault to be found with the suggestions made. The society ought to act upon those suggestions and act promptly, and I do not believe that any jealousies are going to stand in the way of this society adopting such plans as, after consultation with such educators as would be designated to meet with our committee, might be deemed expedient and wise. I do not believe any jealousies are going to stand in the way of any members of this society doing what ought to be done. From the older men who have served the society for years and the younger members who in their student life were marked for their sterling character a committee can be chosen in whom the society and the profession at large will have confidence. The suggestions are practical and will meet the advanced thought of the profession and general educators. The matter of education is progressing. The fact that the care of the eye has been introduced into the schools is one evidence. You could not have done that ten or fifteen years ago. It is true some of the men who were instrumental in bringing that about in this State were accused of personal aims in the matter. Maybe it is true. I have heard men, who have done much for the community in other lines, accused of personal aims, but that is a kind of selfishness that works good to the whole community; it is a selfishness that is commendable. The public is getting more and more ready every year and we can do now what we could not have done in the earlier days of the association.

I know the public in many ways is much more ready for these things than it was a few years since, and it certainly is within the province of this society to take some steps in this direction We may make some mistakes in our endeavor to find the right way; if we cannot find it the first time we will find it the second time, and I certainly would like to see this society take some definite action, not only in regard to his suggestion, but the other suggestions made by the President. They are all worthy of our careful thought and consideration.

Dr. M. M. Frisselle: I am out of the profession. I have not been in the practice of the dental profession for the last twelve years, but I have been very much interested in the discussion I have heard here this afternoon. I do think the matter of preventive dentistry is a very important one for all dentists to consider, and I think the matter of instructing the mothers, instructing the teachers and instructing the children in the schools is a very important one to be considered and brought forward and insisted upon besides. The matter of instruction in regard to the use and abuse of the eyes is certainly one of the most important subjects that has ever been introduced into our schools. I remember some years ago the case of a little girl who complained that she could not see what was going on on the blackboard, and the teacher called her up and censured her and was very severe in her remarks to the child because the child could not answer the questions put on the blackboard, but the poor child could not see because she was nearsighted. The defect was discovered, glasses were supplied and then she could see as well as the rest of them. It was a cruel thing to blame and censure the child for something she could not help. The matter of caring for the teeth is a most important one, and I presume in the paper to be read before the society this afternoon on temporary teeth there will be some very valuable and interesting points brought out.

I am very glad to meet the members of the State Dental Association. I was engaged in this work for forty or fifty years and finally thought it best to retire, but I still keep up my interest in the profession and scientific work of this kind.

I thank you kindly for your attention.

Dr. F. B. Noyes (Chicago): I have not much to say on this subject, but it is a subject in which I am vitally interested. While one of the Chicago societies has been interested in this matter for about two years they have confined their efforts to finding out what has been done in the public schools of large cities in this country and Europe. Although they have been actively interested in the subject, they have been able to arrive at nothing practical in the Chicago schools. The suggestions by the President in his paper seem to be among the most valuable and along the most feasible and perfect lines. The appointment of a committee from a recognized body of the

State to confer with a committee of educators to bring the subject into our public schools in a way that would be most efficient in the education of the children I believe is an admirable plan. The co-operation of a professional and educational body seems to be a very excellent idea. It will do far more good than delivering an address before the children of the schools by some member of the profession. It involves more than the education of the children. It involves the practical education of the teachers in the schools so that they will have some idea of the normal condition of the teeth, so that when disease and trouble come they will at least have an intelligent idea of what causes the trouble and what should be done to remedy it. It will add to the teaching efficiency, and it will aid in the conservation of the health of the whole community, and that is a matter which to us as a profession is of the greatest importance. It is of as much importance to us that the mouth is properly cared for in the community as it is to the physician that the children of the public schools are vaccinated and infectious diseases are properly watched. It is as much of professional interest to us as those professional interests are to the medical profession.

DR. MURRAY, CLOSING REMARKS.

The President (Essayist): I sincerely thank the gentlemen of the Minnesota State Dental Association for the kindness they have shown me in the consideration of this paper. I feel that the remarks I made in the paper were gotten up in very crude shape, but I think the discussion it has brought out has been very valuable. I believe when the proper men get hold of it and it is carried to completion, much good will result therefrom. Judging from the letters I have in my possession from prominent educators, I think the idea is perfectly feasible. Dr. Jordan, of the schools of Minneapolis, assured me that he would do all he could to promote and foster this movement as he was very much interested in it. I have letters from all of the normal school presidents in the State except one, and he was away from home, which is the reason I did not hear from him, and they have all expressed themselves very favorably toward it. I have also letters from many of the teachers throughout the State and from our city teachers asking where they could get information that they could impart to their pupils. I believe the time is ripe for a movement of this kind. If I had not believed so I would not have suggested it in my paper. As we grow in professional importance and as time passes and scientific matters progress we must keep pace with this progression and with the other professions, and I think, as I said before, the time is ripe to take some action in this matter, and I hope the society will look upon this movement favorably, as I am much interested in it, but I wish to caution the committee to be appointed, to be very careful as to how this is done. I think there is a way to do it that would meet with the approval of the profession. I have had several conversations with Dr. Jordan in which he has suggested to me ways in which very few men need to appear in public and which can be explained when the committee is appointed. I thank you for your consideration.

Dr. G. P. Mendell read a paper entitled, "The Care of Children's Teeth." See page 682, vol. XIV.

DISCUSSION.

DR. H. A. KNIGHT: This is rather unexpected to be called upon to discuss the paper, still it is a subject in which we are all very much interested. It is not exactly a specialty that we all like to follow, taking care of children's teeth, but I think with the essayist that it is one of the most important subjects we have to deal with. In the first place the children come to us when young and try us about as much as we try them. I think in that matter it is about a standoff. I cannot say that operating for children is a branch of the profession I like to follow, but at the same time if they are taken in hand about two and a half years of age they can be made a paying practice in the future. As the doctor suggests the first operation must be a very slight one, and, perhaps, it is better to encourage a visit from the children and not attempt an operation the first time. Let them play around the office, give them a rubber dam, and some forceps and a mallet; let them become acquainted with your office and the next time they will be more willing to come. I never have had very many children I could not handle in some way. As regards filling the temporary teeth, I agree with the essayist that that should be done. Some cases that lately have come under my notice have been very nicely handled by means of the mummifying paste that has so recently come into use. I remember the case of one little chap who came to me suffering with toothache. He came to the city with his mother on a visit and had only a few days to stay, and his toothache made it very unpleasant both for himself and his mother. She brought him to my office and asked what I could do for him. He was not a good patient, but I got him in the chair and by means of cocaine application I removed the body of the pulp and immediately filled the pulp chamber with mummifying paste and he was relieved. I watched him for a couple of days and he seemed to feel comfortable. Gutta percha fillings have found a pretty acceptable place in my practice with children. Of course, it is of a temporary nature, and I agree with the essayist that our operations on children must be temporary and as nearly painless as possible. Another point I want to emphasize is the danger of the dentist doing anything without the knowledge of the patient. The mother will say, "Pull it when he isn't looking." I hate a man who fools me that way. I tell you those little patients will not forget it. It is better to be honest with the little folks.

Dr. L. P. Leonard: The best way I can discuss the paper is to say that I endorse it fully in every respect. It is just my belief exactly, everything she said.

Dr. Geo. Todd: I think the main point the essayist brought out follows right along the line of the President's paper, and that is the matter of education. She spoke of the mother bringing in her child with the first permanent molar thinking it was a baby tooth, a temporary tooth. I know that in my practice the parent argues with me claiming it was a temporary tooth for the reason that they never had one previous to it, and if we had a little more dental education along that line we would be saved a great deal of annoyance in that way. The point that Dr. Swift brought out that after awhile education would be so perfect that we would not have to have dentists, made me think that if we followed out this line of education we would not have to treat children's teeth as much as we do.

Dr. T. B. Mercer: I noticed the essayist said something about the crowning of temporary teeth. I think it is possible to take that a little bit more seriously than some of us do. While crowning a tooth in a child, I should imagine, would be rather a difficult operation and would have to be slighted somewhat, I think it would be a decided advantage to the patient if you could prevent the arch in that way from contracting.

Dr. C. H. Goodrich: I think Dr. Mendell is to be congratulated on giving us such a valuable paper on a subject which is usually considered as not amounting to much. In regard to the treatment of children's teeth I much prefer to let some other dentist take care of them, and I have pretty nearly come to that pass where I would like to turn over the children that come to me to some other person.

I am getting old and nervous myself, I am big-hearted although I don't look it, and I do hate to hurt the little folks very much, and I think we have dentists in St. Paul who can handle that class of work better than I. I can be very smooth myself, but I cannot hope to succeed in all those cases. I have never tried to crown. When I get children to operate on I give them something that tastes good, have a nice little talk with them and let them go away thinking I am the nicest man they ever met, and then, if they are patients that stay by me, I get along very well. I refer in these remarks to children under 12 years of age.

Dr. T. E. Weeks: I like very much better to work for children to-day than I did fifteen years ago. I can handle them much better, although they do try one sometimes. When you get hold of a patient that beats you the quicker you resign in favor of somebody else the better off you are, both from a business standpoint and for your reputation. There is one thing absolutely necessary with all patients, but especially so with children, and that is gaining their confidence. What I consider the strongest point in Dr. Mendell's paper is when she says that a slight operation, although you recognize it to be imperfect, without pain, was much preferable to a more perfect operation with pain, because, as the essayist has said, children remember pain above everything else. They always remember kind treatment, and if you accomplish an operation without pain they will soon set you down as a good fellow because you do not hurt them, and they prefer to come to you and the mother prefers to bring them frequently because they get along without pain. I have scores of little patients whose teeth are patched up, as often as necessary, and I would be contemptible to tell them something I did not believe myself, but I save the deciduous teeth until the time for the eruption of the permanent teeth. I do not believe I am any less nervous than my friend Dr. Goodrich. I used to feel exactly as he does, but I have gotten over that feeling. I will let you into a secret. I use Ames' oxyphosphate of copper. I wish every dentist would become acquainted with it; if he were he would not fear children so much. It can be used where nothing else can. It can be used with simply washing out the cavity and drying it. You can do without a rubber dam where it is necessary to use a rubber dam with other cements, and the cavity excavation need not be so extensive.

Dr. C. H. Goodrich: I want to say to Dr. Weeks that I do take care of children's teeth, and I try to be a teacher as far as I am able to be, but children, as a rule, are brought to me when they are in trouble, appointments are not made for them, as a rule, and I have got to stop my business to look after them, taking my time and work that could be employed more profitably elsewhere. I try to be kind to the little ones, and I do take care of quite a number of little children, but it makes me nervous to have a patient wait while I am taking care of two or three children. If there is some one who makes a specialty of children's teeth I would prefer to send my cases to such an one to take care of, and simply look after the practice of dentistry in so far as it relates to the treatment and care of the permanent molars.

Dr. O. A. Weiss: I am glad Dr. Mendell has come among us with the idea of caring for children's teeth and has taken a liking to this line of work. I do not think there is any question among us as to the necessity of caring for children's teeth, but we have heard only of the methods of caring for some of the simple troubles we have with children's teeth. When we go back to our offices and try to carry out some of the ideas that have been suggested here we do not always meet with the conditions where the treatment suggested will apply. I think a little thought should be devoted to the more difficult cases usually presented in our offices. Children do not always present themselves with simple cavities. I think fifty per cent of the cavities presented to me for treatment have exposed pulps. That, probably, is where a great many would hesitate to crown a tooth. I do the best I can with them. If the pulp is alive and exposed I destroy it. It is the best I can do. If the pulp is already dead and putrescent, or the tooth abscessed, I clean the root canals and fill the best I can. I do not expect to cure the abscess that has formed there; I hope to, but I do not expect to do it, and if I do not cure the abscess I am not disappointed. Here is a question for discussion: What is the proper method to pursue where there is an abscess you cannot cure? I think there is room for discussion along that line.

Dr. Scipio Bond: I was pleased with the essayist's recommendation of a small brush. I think if she had added also a smaller brush than it is possible to obtain at the stores at present it would have been better. I do not believe the ideal tooth brush has yet been made, and I think some one in the profession should get up a tooth brush in a smaller article. It is impossible to get good service out of a brush made like a clothes brush or a curry comb.

Dr. M. M. Frisselle: I like the essayist's paper very much, and I would like to add that the brush should be soft. The children do not want a hard brush. Nobody likes a stiff brush, and children will not brush their teeth if it hurts and if it is a very stiff brush it will hurt. The gums are very tender and those not accustomed to a brush it needs to be very soft, and I would insist that the brushes that are made for the use of children should be not only soft but small.

Dr. H. A. Knight: Just a word in regard to children cleaning their teeth. They always clean their teeth when they think about it. It is not so much the work, but they forget it. I know how it is because I happen to have two little shavers at home myself. I have an easy way of keeping track of them. We use the bathroom for toilet purposes and use those prophylactic brushes, and all of them have a hole in the end of the handle. I have three or four hooks along the woodwork so the little fellows can hang their brushes up alongside of mine. When I go to the toilet room I feel of their brushes. If they are wet I know they have cleaned their teeth, and if one of them is dry I know which one missed. They don't know how I can tell; it is a great mystery to them how I know which one skips.

Dr. J. M. Walls read a paper on "Enamel Cleavage." See page 15, January number.

DISCUSSION.

Dr. F. B. Noyes (Chicago): In the study of dental histology there is no matter of so much practical value to operating dentists as the structure of the enamel. If we consider the complicated forms of tooth crowns, and the positions in which cavities occur, and that we experience so great difficulty in cutting enamel in some conditions and so little difficulty in other conditions, I feel as though there was some reason why we have so much trouble, and if we knew how to get at the enamel properly we ought to do it easily. The more closely I study the matter of enamel rod directions the more easily I can prepare my cavities. I have said a number of times to the students at school that nothing has so advanced the rapidity of operation as the study of enamel rod direction. I find that at the chair I now prepare cavities a great deal faster and a great deal easier than I used to. Within the last week I had a case in which it was necessary to cut down a great mass of perfectly sound enamel, and I know that a few years ago I would have worked on that case an hour, but four strokes of the chisel and mallet took the whole mass away. If you do not know their direction you can chisel on them an hour, but if you know the direction in which the rods run you can do the work with a few strokes of the mallet. A man in Chicago, a demonstrator in a medical school, whose wife had been suffering from an aching tooth, came to Dr. Black and asked him to make an examination. He found a fully exposed pulp in a bicuspid, one of those cases where almost the whole mass of dentine had decayed, but left almost a perfect enamel. There was no break in the occlusal surface, but a sound enamel over the whole surface, and the dentist who had been treating the tooth had been endeavoring to open up that cavity with a big burr in an engine so as to treat the tooth, and all the time it was as sore as a boil. He had made six or seven attempts to open the cavity, so as to reach the pulp, until the patient had been worn out. It took a half dozen strokes of the mallet and chisel by Dr. Black to lay the whole crown of the tooth open. He split the whole tooth to pieces with a few dozen strokes of the mallet without any pain practically. The whole dentine was just like soft leather and he scraped it out. In twenty minutes from the time he saw the patient she went away comfortable. You could not whittle on that enamel with even a sharp burr and accomplish the same result in the same time.

In the matter of correct and easy enamel preparation the first thing necessary, of course, is to study some sections thoroughly through the microscope, or some photographs so as to learn the first fundamental idea of enamel structure and rod direction, but it must be understood that the enamel rod direction cannot be learned entirely from a microscopical study. You must learn the fundamental idea of it, so you must have some appreciation of the structure of enamel, then equipped with this knowledge you must learn the enamel rod direction at the chair. If every time you put your instrument upon the enamel you notice the direction in which it splits you will soon, by experience, learn the rod directions and do quicker work than if using a burr. A chisel or sharp hand instrument will beat a burr all to pieces, and it is easier for the patient and easier for the operator. In most cases where we would ordinarily use a burr a chisel would do better. If every time you touch the enamel with a cutting instrument you do it with that idea of the structure in mind you will know the direction in which it should break and learn to follow in the direction in which it will split. Try it this way and see if it cleaves, and if not try it in another direction. In that way you will learn the enamel rod direction practically. You will find by a microscopic study of sections of the enamel that the rods do not always follow general rules of direction. I said a few moments ago that the rods followed the plan of the diagram shown on the board, but in this place (indicating) a certain disturbance has taken place in the formation of the enamel rods and their direction here is irregular. You will feel the difference with the chisel in a minute, when working in such a place, and will feel that those enamel rods are not running in the normal direction to the dentine and the changed direction and structure must modify the preparation of the cavity margin in that position. The thing which should determine the positions of all the cavity margins is the direction of the enamel rods. Our cavity margins must be laid in such positions as to have strong enamel walls. In the preparation of the enamel margin the first thing to do is to cleave the tissue so as to find the rod direction. Let us put back the slide we had a moment ago. This slide (indicating) shows how we begin the preparation of a cavity margin. We have cut away the lower half of that enamel so as to leave our margin in this position. (Indicating.) You will notice that in cutting this way (indicating) the break follows the direction of the enamel rods but at the outer end it has broken across a few rods, so that they are left with their inner ends cut off. Such portions of enamel are sure to break out either in making the filling or afterwards, when force comes upon them. The filling, which comes back with a ditch around the margin where the pressure comes on the edge, does not always mean that the filling has given way from the margin, but it may mean that the enamel has broken out at that margin. The angle of the enamel wall must be extended so as to remove these short rods.

Dr. E. K. Wedelstaedt: I do not think I can add anything to what has been already said. I wish to compliment Dr. Walls for the very excellent essay he has presented for our consideration. I was pleased to hear Dr. Noyes say what he has and I am very glad to endorse every word of his talk. The importance of this subject is very great, and in no way can I tell you how great it is so that you can more fully grasp it than by speaking of a method I have followed for several years. Each time that an extracted filled tooth has come into my possession I have taken care of it and laid it away for future use. Microscopical sections have been made of many of these filled teeth so that I might more closely study the enamel margins. If the gentlemen of this society desire to know what kind of enamel margins are generally made I would suggest that they try the plan which I have followed for several years. It is a plan for self-instruction and study. No instructor is needed. An ordinary microscope will tell you more about this subject than can be found in all the text-books put together, provided you make a few sections and study them. If this method is followed you may be as greatly surprised as a number of others of us have been who are following this method so as to further our information regarding this subject.

Dr. T. E. Weeks: If I attempted to discuss the paper or attempted to make any remarks following those of the gentlemen who have preceded me I would simply be "carrying coals to Newcastle," so I think I will sit down after making a plea for the general adoption of the use of the chisel for enamel work instead of burrs.

Dr. E. K. Wedelstaedt: The reason that hand instrumentation was not endorsed is this: The disciples of the great and renowned Black who live in this Northwest follow the methods Dr. Noyes spoke about so that there was little necessity for my saying more than that I endorse all that Dr. Noyes has said.

Dr. T. E. Weeks: I venture to say that some of the cavities that our friend, Dr. Wedelstaedt, examined were not prepared according to the high tenets of our grand leader, Dr. Black, and some that thought they did follow him did not.

Dr. G. V. I. Brown (Milwaukee): I am so glad to get back home again that my mind has gone on a holiday, and I do not think that I have anything to say on the subject, but I am glad to be here.

So far as the use of hand instruments is concerned, and so far as the conclusions we can draw from the figures we have seen, I want to say I do not think it should be impossible for any of us to make up our minds too radically and too quickly on this subject. I think there are many men to-day who use hand instruments, particularly chisels, twice as much as they will use five years from now. On the other hand there are quite as many men who do not use them sufficiently, who will use them twice as much five years from now. I find myself obliged to protest in a mild way against the illustration Dr. Noyes gave us of a tooth that had an apparently pericemental inflammation where a burr could have been used to relieve the patient instead of increasing the pain of the operation. This subject will bear a great deal of consideration. "Things are seldom what they seem," and the actual preparation of the cavities, while based upon the principle demonstrated, will represent in the individual cases a very great deal of variation from the ideal cavities which have been outlined upon the screen. It is not for us to consider these matters. It is a great privilege to be able to see such pictures, but we must be careful in regard to our positions.

Dr. J. M. Walls (Essayist): I have nothing to add to the discussion. I am well aware that the matter of instruments is something that should be considered in a good many ways, and I think it is a matter that deserves our consideration very fully. Enough has been said on the subject and I will not take up any time in further talking upon it.

DENTAL SURGEONS IN THE ARMY.—NOTICE.

Candidates for appointment as dental surgeons in the U. S. Army will be examined in the following named branches:

Anatomy.
Physiology.
Histology.
Physics.
Chemistry.
Matallurgy.
Dental Anatomy and Physiology.
Dental Materia Medica and Therapeutics.
Dental Pathology and Bacteriology.
Orthodontia.
Oral Surgery.
Operative Dentistry, Theoretical.
Prosthetic Dentistry, Theoretical.
Operative Dentistry, Practical.
Prosthetic Dentistry, Practical.

An average of seventy-five per cent will be required in each subject for theoretical examination, and eighty-five per cent in the practical examinations.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE ILLINOIS STATE DENTAL SOCIETY.

Elsewhere we present the program of the Illinois State Dental Society to show our readers what will be done at the next annual meeting in Rockford, the second Tuesday in May. Look it over, and you will find some subject of interest in the list of papers or in the clinics to ensure your presence. Hearing and seeing are two important elements in attending a meeting of this kind. Every wide-awake, earnest student in the State should show his interest by being present.

This society has done much good work, and a new impetus to progress is here offered to those who may be interested about the State society. Come out and be assured of a profitable time.

ADVANCE IS THE WORD.

The passage of a law regulating dental practice in New South Wales has been followed by the establishment of a dental school in Sydney. Wherever dental laws are enacted, if there are not already in existence dental schools, they naturally follow, to fit men for the new order of things. This is especially gratifying when we see such efforts made in comparatively new countries. Everywhere we notice a gradual improvement in the matter presented to dental students, new facilities are offered from year to year, keeping pace with the general advances in all professional atmospheres. New methods of teaching and the establishment of technical training to go hand in hand with the lectures and demonstrations show conclusively that no backward steps are being taken. The papers read before societies are improving all the time and other sciences and arts are being drawn upon to make dental education a real scientific education. The modern dental practice is so young that we are amazed at the spirit of progress attained. It has been our good fortune to be present at three or four midwinter meetings since last October, and we have not found old and hackneyed subjects taking up the time of the audience. This is a source of gratification to all as it is evidence that the new century will do great things—far greater things than the past fifty years has given us. We are only being awakened to the possibilities of future discoveries in every department of practice, and he is dull indeed who does not see the signs of the times.

DOMESTIC CORRESPONDENCE.

Letter From New York.

To The Editor of the Dental Review:

Dear Sir: The special event of the past month was the annual dinner of the Central Dental Association of Northern New Jersey, on Monday evening, February 18th, which was their twenty-first annual banquet. The Jersey society's hospitality each year becomes better known. Those who dine at their board one year are very likely to make special effort to be present a year hence. In the meanwhile the gospel of good fellowship is spread and the next year sees new faces about the board. This year one hundred and fifty or more were present. The menu book (for such it was) was quite an elaborate affair. Three full pages were devoted to reproductions of excellent photos of the present officers of the association. The guests of the evening were the following:

Hon. James M. Seymour, Mayor of Newark.
V. E. Turner, D. D. S., of Raleigh, N. C.
H. J. Burkhart, D. D. S., of Batavia, N. Y.
J. F. Dowsley, D. D. S., of Boston, Mass.
W. W. Walker, M. D. S., D. D. S., of New York.
Sol Freeman, D. D. S., of New York.
J. E. Duffield, D. D. S., of Camden, N. J.
C. C. Chittenden, D. D. S., of Madison, Wis.

There was also a photo of a very attractive woman on the "Menu du Repas," which Dr. Walker (letting the secret out) said was a foreign lady Dr. Meeker was quite attentive to while in Paris last year. All seemed to wine well, and dine well, and smoke well from 7 until 10, when the President, Dr. H. S. Sutphen, claimed the attention of the assemblage, by reading a few well chosen references to the twenty-first year of the C. D. A.

Dr. H. J. Burkhart was announced as one of the speakers, using as a topic, "Success in a Country Town," but he soon rambled away from that theme and spoke instead, of examining boards, etc. One thought he expressed was, that "the greatest menace to examining boards to-day are the medical men who are in the dental colleges."

Dr. W. W. Walker, of New York, was called upon to respond to the toast of "Babes in the Woods." His speech was "witty and wise." His friends said it was one of the best that he has ever delivered. The doctor always has the faculty of holding his audience; anticipating the happy side of any subject and upon this occasion they were not disappointed. He spoke very feelingly of Dr. Stockton, who sat near him. The doctor (Stockton) was referred to as the Dean of the C. D. A.

Deserving compliments were bestowed upon Dr. Meeker and others for their part in furthering such a society as the C. D. A.

Dr. Walker said that they carry the palm as a society of good fellowship.

Dr. Sanger and Dr. Luckey were two good speakers of the evening. The former in his flowery way, the latter full of logic and sincerity.

But what of him who owns no fear,
  Whose motto is, "I can and will!"
Thought is all powerful and he nears
  The perfect man who does instill
In his own being thoughts of strength,
  Faith in himself, all wealth his wage,
All things will come to him at length—
  This is the *whole* man's heritage.

The Odontological Society had as its essayist at the February meeting, Dr. S. B. Palmer, of Syracuse, who read a paper on the "Chemistry of Organized Life." That, we all know, has been Dr. Palmer's theme for ages. To the profound thinker there is something more fundamental in the doctor's theories than can be grasped by the elementalist.

Dr. Palmer said that he first advanced his theories twenty-six years ago and then somebody pronounced his paper as a disgrace to the profession. Since then he has gradually been accorded better treatment. He quoted extracts from some authors, such as Williams and Black, sustaining his theories.

He also explained how he first became impressed. Its inception was in 1847, when obliged to wear a denture; first of silver with gold clasps, then to overcome the chemical difficulty he wore gold, vulcanite aluminum, and then cast aluminum.

Dr. Hill, of Brooklyn, N. Y., he said, was one of the first to become interested in his work; then Dr. Flagg, in 1874. He does not believe that gold causes recurrent caries in artificial teeth. In summing up, the doctor said that he does not expect his writings to be accepted in full, but wishes to have it understood that it got its inception in dentistry.

He believes electricity undergoes evolution until it produces life and that caries is as much a form of disease as neurosis.

Prof. Coblitz was present to discuss Dr. Palmer's paper from a technical point. He prefaced his remarks by saying that the doctor was very much under the influence of electricity and that his theories were exploded ones. His paper is based upon a great deal of theory but recent literature should, he thinks, change his mind.

Dr. Kennan, another chemical expert, was requested to discuss Dr. Palmer's paper, and although he was more lenient he did not accept much of his paper as facts. He said that electricity is destined to play unthought of parts in chemical science. We have in the mouth one of the most complete chemico-physical laboratories.

Dr. Hill was called upon to say a few words. He remarked that it appeared to him that Drs. Miller, Black, Palmer and many others were all going to heaven, but—

The regular monthly meeting of the "Institute of Stomatology" for March was held at the office of Dr. Edwin S. Robinson, 28 West Thirty-ninth street, Tuesday evening, March 5th, the President, Dr. J. Morgan Howe, in the chair.

Under incidents of office practice Dr. S. E. Davenport presented for Dr. Kasson C. Gibson, models showing a very remarkable case of hypertrophy of both upper and lower jaws. The patient is a young man, twenty-nine years of age, in general good health. The case was referred to Dr. Gibson by the eminent surgeon, Dr. W. T. Bull. Dr. Gibson promises to send models later, when something has been accomplished.

Dr. Chas. F. Allen spoke concerning his experience in making porcelain inlays and offered some suggestions which were the result of his experiments in this line. He spoke of the difficulties attending the making of inlays for approximal cavities and mentioned some of the methods he employed to overcome these. He spoke of the use of pyrite as an investment, claiming it to be superior to anything else. To obviate breaking the gold by pressure in the cavity, he places it upon a piece of spunk and with an egg-shaped burnisher makes an indentation. Then it can be quite readily adapted to the cavity with much less likelihood of breaking it. When there is a hole in the bottom of such a matrix he lays a piece of heavy foil on the investment material and places the matrix on that and as the matrix settles into the investment the foil makes a good bottom. In cutting the groove around the inlay before cementing much difficulty is experienced in holding the very small inlays. This he overcomes by sticking the inlay to the end of a piece of orange wood with shellac, which holds it firmly and permits the operator to cut the groove readily. He uses kid to finish tamping in the matrix to place instead of spunk.

Dr. Geo. A. Maxfield, of Holyoke, Mass., read a paper on "Malignant Growths in the Mouth Incidental to General Practice." It was in the main a description of three cases of carcinoma occurring in his practice, which served as a text for the two gentlemen who were especially requested to discuss the subject—Prof. Robert H. M. Dawbarn and Dr. William B. Coley. Dr. Maxfield enlarged upon the necessity of the dentist being able to recognize malignant growths in their early stages so that proper surgical advice might be had before it should be too late. Prof. Dawbarn dwelt upon the early diagnosis and the surgical treatment of cancer in the mouth. He noted the difference between syphilitic indications and those of carcinoma in the mouth and differential diagnosis of cancer of the tongue; said that the microscope should be relied upon to determine positively. In carcinoma of the tongue prompt, early treatment was the only thing that would avail. He said most such patients were aged and cachectic.

Dr. Coley, discussing the question from a surgical point of view, spoke of the antitoxin treatment, on which he is authority. He spoke mainly of cancer of the lower jaw; said that the history of many cases was that it was the result of ill-fitting dentures or improper extracting. Enlarged upon the value of early diagnosis; said there was but little pain in malignant growth in early stage, while much pain existed at that stage in purely inflammatory swellings. Painless lumps are serious things. Prognosis in lower jaw, absolutely bad; in upper jaw, not so bad. Toxins were of value in sarcomatous growths—mainly spindle-shaped sarcoma.

And now, let me say a few words in reference to the most pleasant event (a genuine unalloyed social function)in dental circles that it has been my pleasure to experience. Invitations were received during the past week reading thusly:

Dr. S. G. Perry requests the pleasure of your company, at a conversazione given in honor of the New York Odontological Society and the Psi Omega Dental Fraternity, on the evening of March the eighth, nineteen hundred and one, at eight o'clock, 46 West Thirty-seventh street.

The Dannreuter Quartette.

At nine o'clock. R. S. V. P.

There must have been more than one hundred responses to the invitation. The number given in the invitation is Dr. Perry's home, and a most handsome one it is, too.

The doctor deserves all the good and luxuries that he is surrounded by for he has labored assiduously, faithfully and well to attain it. His geniality, comradeship, sincerity, and unselfishness has endeared him to all.

The evening was given over to social amenity interspersed with some outside talent. To listen to the Dannreuter Quartette is regarded as a treat in itself.

Prof. Silas G. Pratt, a favorite pupil of Liszt, and a well-known composer, presided at the piano and rendered several selections very acceptably. He accompanied Dr. Default, who sang several times. He rendered the "Marseillaise" to the great satisfaction of the company.

Dr. Walker introduced Mr. Waters, from the Lotus Club, familiarly known there as "Seltzer Water." He gave many humorous selections. Among other things he said, "I will begin by singing 'To-Morrow Night,'" which he proceeded to do until all were laughing uproariously.

Later in the evening all adjourned to the diningroom, where a lunch in keeping with the festivities was served.

A few of us were obliged to drag ourselves away from the pleasantries and our host before the culmination of this most auspicious event.

Believe me sincerely,

"The Boroughs."

FOREIGN CORRESPONDENCE.

LETTER FROM GREAT BRITAIN. CONGRÈS DENTAIRE INTERNATIONAL, DE 1900.

It may seem ungracious to cavil at the eulogia passed upon the International Dental Congress at Paris by eminent members of the dental profession, who came from Chicago and took part in it, to point out some defects. Great pressure was exercised to induce dentists who had done original work to attend the congress with the object of advancing the profession of dentistry in all its branches, and of affording an opportunity to men of similar tastes in study and research, to meet and compare notes. We have been accustomed in the British Dental Association to have certain matters carefully carried out which relate to the harmony and well being of the annual meeting, so that it was something of a shock to find that our French brethren were at least two months behind hand in all their preparations, and that instead of an orderly well thought out congress, we had confusion, haste, impatience, and few opportunities of meeting one another. The congress was held at three different places, and in none of these meeting places was there room for the general body of members. The dental schools are situated at inconvenient and out of the way places, and the result was a disappointment to many visitors. Our French brethren undertook to issue a daily journal during the congress, but after the first day the information given in it was altogether out of date, and related to the proceedings of the preceding day instead of the program of the day. There was an understanding or promise made before the congress opened, that members who entered their names and addresses at the secretary's office in the Societie des Savantés would receive every morning before breakfast at their hotels a copy of the program for the day. Not unfrequently this program was issued late in the afternoon, and members had to go to headquarters for copies. The program laid down was never adhered to, causing great confusion. Some members of the congress were more fortunate, especially Americans, who were able not only to break the rules of the congress by reading papers at the last minute, but of using two hours for their dissertations instead of the sixty minutes as allowed by the congress. To original workers who complied with the regulations and sent their papers in ample time (three months before the opening of the congress), this appears a harsh way to conduct a congress. It would appear to be a matter of considerable importance if international congresses are to be carried on, to lay down such rules for the future and *enforce* them, that order and comfort as well as some progress will be the feature of such undertakings. It was rather absurd to find numbers of names of members put forward as contributing papers, who never crossed the Atlantic at all, or had any intention of preparing or reading papers at the congress. This is a matter that should be avoided in future. It is a disappointment to members to find that having attended the congress at considerable expense, that members well known in dental literature, or for their skill as dental operators, who were announced to attend were conspicuous by their absence at the congress. Another matter has come to light that will probably create some uneasiness on the part of members of the congress, who are not Frenchmen, namely, the illiberality on the part of the bureau having charge of the publication of the proceedings of the congress. It will be found when this undertaking comes to light, that the whole aim of the printed proceedings will be to glorify France at the expense of all other nationalities. This is quite right, no doubt, in a way, but it would have been kinder to have given us notice. Papers of originality and research, which have cost the observers many years of close attention, were read at the congress. Some of these authors corresponded with the general secretary in order to learn when the necessary drawings should be sent in to be 'processed' for the published proceedings. Many applications for information have been made, but no answer was ever returned. Very courteous replies were the rule, stating that your letter had been received, winding up with the usual French compliment, which gives no information on the questions asked, although it is very delightful to read. "Agreèz Monsieur et honore confrere l'assurance de mes sentiments très distingués." At the beginning of the congress it was agreed that authors would be supplied with illustrations for their papers if they took the trouble to communicate beforehand with the committee of organization in Paris. This has been done in several instances without the slightest benefit to the authors. It is, therefore, a cruelty to men of originality and research to be taxed with the cost of illustrations, when they place the results of many years close application and effort, at the service of their profession throughout the world. The national committees, to my knowledge, are already dissolved, so that nothing apparently can be done to right this wrong. I am curious, therefore, to know whether Dr. Brophy, Dr. Case, and other able and original American dentists, are being treated in the same narrow spirit that I have described with regard to their papers. As a result of the confusion and loss of time in Paris, I would ardently advocate before any further international dental congresses are carried out that one or two *Anglo-Saxon* congresses be held. We would have at least a common language "understanded of the people," and endless good would come from such a meeting, as the English speaking dentists have done as much as any others in the world toward developing their specialty. The state of affairs in Paris shows a curious state of mind on the part of the French dentists. "France for the French" is the foolish policy now agitating France in all directions, and American dentists will be interested to know that the Paris dental schools were first organized by English dentists in Paris. These men after fifteen years' service, were offered the opportunity of resigning their useful work, or of becoming French citizens. Americans will readily understand what took place when such an offer was made to professional men. It was a very great disappointment to many of us that the proposed Anglo-Saxon banquet did not take place. Such a function would have given many of us opportunities of meeting old friends again under agreeable social conditions, of making something of a great occasion, and of mingling together with the feeling that "blood is thicker than water." Such a banquet would have had far-reaching consequences—but although the English dentists in Paris did all they could to promote it, the Americans resident there foolishly quarreled as to who was to be president. These squabbles become so acute that the project had to be abandoned, greatly to the disappointment of many of us, who traveled hundreds of miles to be present. One could never have imagined that these men could have read of King Arthur and the knights of the round table. It would have been perfectly easy to have elected a dozen presidents if necessary, in order that this occasion should be celebrated as it deserved to be. Although I am a Britisher born, I know the United States, and the feeling of my profession in the higher directions. I heard expressions of deep disappointment from the American dentists who visited Paris, when they learned this banquet or joyful occasion of meeting was abandoned. It seems to many of us that it would have been easy to have arranged breakfasts, luncheons, dinners, and the professional meetings of the congress at a common center. Had I been one of the Paris committee I would have taken a large hotel and held all the proceedings in it, so that foreigners would not have had to walk miles for refreshment and rest.

The meetings were held in close, stuffy rooms where the air became poisonous and several headaches became the necessary consequence. The lack of punctuality, the change of program not only at the last moment, but on every day, made a good many of us who prepared papers, resolve that in future, we would not take part in international congresses managed in such a childish and unbusinesslike manner. It was of no avail to have written to the Paris committee that you wished to show lantern slides, or to do anything in a decent, orderly way.

Perhaps the exhibition of the other side of the medal will be something toward avoiding such scenes of disorder and lack of consideration to men worthy in every way to be treated with the greatest kindness. I am, Sir,

Geárchóta Bháu.

Note.—We give space to this letter as it is our custom to give all sides a fair hearing. Many of the things spoken of in this letter are only partially true, but they will have to be corrected by the authorities in Paris. Meanwhile the editorial opinion is that the smaller evils are so overshadowed by the great results attained that they should be overlooked, and not made the target for ill digested articles like the above. [Editor.]

Foreign Relations Committee, N. A. D. F.

Department of State.
Washington, Feb. 6, 1901.

W. C. Barrett, Esquire.
Chairman Committee on Foreign Relations
of the National Association of Dental Faculties,
208 Franklin Street, Buffalo, New York.

Sir: At the suggestion of the Consul at Munich, I enclose for your information, copy of a despatch from the Consul in regard to American dental degrees in Germany, and the efforts which are being made to prevent those, who hold fraudulent diplomas, from practicing dentistry.

I am, sir, your obedient servant,
(Signed.) Thos. W. Cridler,
Third Assistant Secretary.

Consulate of the United States of America,
Munich, Germany, Dec. 29, 1900.

Honorable David J. Hill, Etc., Etc.

Sir: Referring most respectfully to my unnumbered despatch of April 21, 1900, upon the subject of American dental degrees in Germany, to which I was honored with a reply by your department under date of July 17, 1900, No. 36, I have the honor most respectfully to report at this time:

1. That I have since placed myself in relation with the organized associations of American dental graduates in Southern Germany, and in connection with the learned counsel of this Consulate, have advised them how to conduct themselves in their relations with the government and press, and in the defense of those of their members who have been or are being prosecuted for what is termed here an "unlawful" use of their honestly acquired titles of D. D. S.

2. That at the same time in all cases whether of gentlemen holding legitimate diplomas or of persons holding illegal issues, I have been in constant communication with the Bavarian Department of Justice and the foreign office to protect the rights of all legitimate holders of such American degrees, correctly issued, to use and advertise their degrees, and to secure the prosecution and conviction of those illegally holding American certificates or honors.

My task has been a peculiarly difficult and delicate one, as there is in the first place, even among educated and intelligent Germans, a misconception of the character of American universities, and especially the schools of dentistry, on account of many of them being, as far as their original organization is concerned, in form at least, private concerns, and among the less informed a strong prejudice against American degrees on this account. It has, therefore, been a matter of propaganda to bring the authorities to understand that under the republican forms of government existing in the several States, where so much is necessarily left to private initiative, these institutions, although in form private enterprises, by virtue of their charters and the right of visitation and control by the State authorities, are in fact public institutions.

Another difficulty lies in the fact that the German universities, stimulated by the reputation and success of American dental colleges, have added dental departments to their curricula, which, in theory at least, are not inferior to the average American institutions; and among others the University of Munich has recently established such a department which in equipment and the character of its instruction will prove inferior to no other.

The purpose of this instruction in dentistry at the German universities is to offer to Germans the opportunity of educating themselves thoroughly in that art and to raise the estimation of German dental degrees to the American standard, so as to induce students to remain at home.

It is easy to comprehend how this jealousy of American degrees finds its expression not only among prejudiced people, but also among holders of German dental degrees in denunciation of American degrees and dental institutions, and also in efforts to bring about a prohibition of their use in Germany.

I have good reason to believe that I have met these difficulties successfully and have been able to convince the authorities here of the value of legitimate American university honors and the titles of technical schools, and of the expediency of not prohibiting them, also of the sincere desire of the United States government to do everything possible to prevent the issue of worthless diplomas, and to effect the closing of institutions issuing them.

My main endeavor has been to secure such evidence as might be of service in proceedings against the institutions issuing illegitimate diplomas, and I have already obtained possession of original diplomas and certificates in two instances, where they were purchased in America by Germans against whom proceedings are now pending.

In one of these cases I have had the diplomas copied by photography and typewritten copies of the certificates made, specimens of which are hereto annexed marked exhibits A, B, C, D, E, F. I have applied to the legal authorities to have the original diplomas and certificates in these cases delivered to me for transmission to the State department, for use as evidence in any proceedings it may be deemed expedient to institute, and though such a course is difficult to effect, I hope for a favorable answer.

Owing to the urgency of the case I have also transmitted copies of these diplomas and certificates to his excellency the Governor of Illinois, and a copy of my letter to him is hereto annexed, marked exhibit G.

On December 10, 1900, a very interesting case was settled in the courts of Munich against one Samuel Gumpoldt, once a "Zahntechniker," now a full fledged "American dentist," claiming also to be the holder of the American degree of Dr. Dental Surgery. He obtained the "Doctorate" at one of those non-reputable dental schools, of which two remain to be suppressed in Chicago. "Dr." Gumpoldt went to America some time last spring, remained a few weeks in Chicago and came back with a certificate from the "State Board of Dental Examiners," permitting him to practice dentistry in Illinois. The States attorney here made the polite request that I should testify as an expert in the case in order to establish the illegality of the defendant's claim, and as a result the "Dr." was condemned for terming himself an "Amerikanischer Zahnarzt" and heavily fined. The case, of course, will be appealed, but it is to be hoped that the Governor of Illinois will cause an inquiry into the illegal practice prevailing in that State by issuing such certificates as in this instance, as the State board is only expected to admit to examination a candidate who has spent at least six months in a regular dental school. In this instance the "Dr." made certain claims as to studies in Roumania, but I fear the State Board of Illinois has no "evidence" to substantiate these claims.

Another case now in the courts is affording me the opportunity to secure by the aid of photography the needful evidence to convict of such illegal practice the other now remaining non-reputable institution in Illinois, making a business of the sale of diplomas, and I shall have the honor to submit this report by an early post.

The rapidly growing tendency among the people of the German Empire to bar out as far as possible all foreign competition may, as I have already suggested, force the governments of the various States to a more determined warfare in behalf of the dentists educated in the schools of Germany only, against those bearing the distinctive honors of the American dental schools, thus ultimately affecting not only the good standing of American dentists abroad, but also destroying their usefulness, if not barring them out altogether. It is to be hoped, therefore, that the course taken by this consulate, however great the sacrifice in labor and time, may prove both timely and judicious, maintain the integrity of our worthy schools of dentistry and preserve them in honor abroad as well as at home.

To this end I would most respectfully ask you whether you do not deem it expedient that publicity be given through the press in America such institutions and in Germany to punish persons holding and advertising their diplomas, in order to deter foreigners from purchasing such titles and thereby to destroy the market for them. I have abstained entirely from any communications whatever to the press, but believe that the widest publicity should be given the whole subject.

I have the honor, etc.,
(Signed) James H. Worman,
United States Consul.

Enclosures:

Photograph of diploma granted "Johannes Fuchs," conferring the degree of Doctor of Dental Surgery by the "Cosmopolitan Post-graduate College of Chicago."

Dated, Oct. 25, 1899.

(Signed) C. A. Weil, Dr. Med., Chancellor.
Emanuel Kargau, D. D. S., Dean.
C. A. Williams, Rector.

Photograph of diploma granted Dr. Johannes Fuchs by the Haskell Post-graduate School of Prosthetic Dentistry.

Dated, Oct. 16, 1899.

(Signed) L. P. Haskell, President.
G. A. Yant, Secretary.

Buffalo, N. Y., Feb. 9, 1901.

Department of State.
Thos. W. Cridler, Ass't Sec.:

Sir: I am in receipt of a communication from you enclosing one from the United States Consul at Munich, concerning the American dental diploma and other matters. I can assure you, sir, that I deem it of the very highest importance to the dental profession of America, and I believe that the consul is doing a work that will advance the interests of many American citizens. Unless I am advised that the communications are in any way confidential, I shall forward them for publication in some of our most important professional journals. I beg that any future advices that the State Department may receive of the same nature may be forwarded to me for communication to the dental profession of America. I am,

Very truly yours,
(Signed) W. C. BARRETT,
Chairman Foreign Relations Committee,
Nat. Assn. Am. Dental Colleges.

DEPARTMENT OF STATE,
WASHINGTON, Feb. 13, 1901.

W. C. BARRETT,
Chairman Foreign Relations Committee,
National Association Dental Faculties,
Buffalo, N. Y.:

Sir: I have to acknowledge the receipt of your letter of the 9th inst., suggesting that the dispatch from the consul at Munich in regard to bogus dental institutions, be published. In reply I have to say that the department sees no objection to your publishing it. I am, sir,

Your obedient servant,
DAVID J. HILL,
Acting Secretary.

BUFFALO, N. Y., Feb. 9, 1901.

HON. JAMES H. WORMAN,
U. S. Consul at Munich:

Sir: I am in receipt of a communication from the Department of State of the United States Government enclosing a report, or copy of a dispatch, concerning American dental degrees in Germany. I enclose copy of my answer to the Third Assistant Secretary in reference thereto. I beg personally to assure you that the great number of dentists in the United States, and the graduates of American Colleges abroad, will fully appreciate the importance of the work you have undertaken, and will extend to you their enthusiastic support.

By this mail I will forward to you copies of the reports of this committee, which will give you some idea of what we are attempting to do. Let me say that we now have in prison a number of those who have been engaged in issuing fraudulent diplomas, and hope the traffic is on the point of being broken up in America.

I beg, on the part of my colleagues, to tender any service on our part in your good work, and I request that I may be favored with any reports or other documents which may assist in the work in which we are engaged.

Very truly yours,
(Signed) W. C. Barrett,
Chairman Foreign Relations Committee,
Nat. Assn. Dental Colleges.

MEMORANDA.

The American Journal of Dental Science is no longer in the arena as a dental journal. Publication was suspended in July.

The first annual midwinter clinic was given under the auspices of the G. V. Black Dental Club, St. Paul, Minn., February 20 and 21, 1901. There was a large attendance and the prospects for successive clinics unusually excellent.

The Tri-State Dental Association, I. K. I., meets in Paducah, Ky., May 28, 29 and 30, 1901. W. H. Brosman, Secretary, Albion Ill., W. H. Pitcher, President, Paducah, Ky.

Truly yours,
W. H. Brosman.

The Missouri State Dental Association will hold its thirty-seventh annual session at Sedalia, Mo., July 9-10-11-12, 1901. All reputable dentists are cordially invited to attend.

B. L. Thorpe,
Cor. Sec'y.

COLORADO STATE DENTAL ASSOCIATION.

The fifteenth annual meeting of the Colorado State Dental Association will be held in Denver, Tuesday, Wednesday and Thursday, July 9, 10 and 11, 1901.

H. F. Hoffman,
Secretary.

THE ARMY EXAMINING BOARD.

Dr. R. W. Morgan, of Lynchburg, Va., is the third member of the army examining dental board. The officers are Dr. J. S. Marshall, President; Dr. R. T. Oliver, Recorder. The board will sit in Washington at first, as there are about 1,000 applicants for the places to be filled.

THE MANILA DENTAL COLLEGE.

We have received the prospectus of the Manila Dental College, of Manila, Philippine Islands. Dr. Louis Ottofy, formerly of Chicago, is the dean, and the first course of lectures began December 27, 1900. The next thing will be to have a dental college in Havana and then one in Hawaii and Porto Rico. Success to this new venture.

ILLINOIS STATE BOARD OF DENTAL AXAMINERS.

The next regular meeting of the Board of Dental Examiners, for the examination of candidates for license will be held in Chicago on the 2d, 3d and 4th of May, 1901. All those desiring to take examination will please communicate with the secretary at once.

J. G. Reid, D. D. S.,
Secretary.
1006 Champlain Bldg., Chicago, Ill.

VERDICT OF $500 FOR ONE TOOTH.

For one tooth of the second growth a jury in Judge Mullin's division of the district court awarded Hugh Riley $500. Riley is a boy of eight years, and, according to the complaint filed by his father, J. J. Riley, was riding a bicycle and playing with other boys on the first of last May, when John Jaeger committed an assault on him, as a result of which one of his front teeth was knocked out. At the trial Jaeger denied having struck the boy, but the parents of Riley testified that they had called on Jaeger a half hour after the affair and he had admitted striking their boy. The suit was brought for $5,000.—*Denver Paper.*

THE FIRST GERMAN MILITARY DENTIST.

The honor of receiving the first appointment as a military dentist has been reserved for M. Wilhelm Lippold, of Rostock. M. Lippold receives 300 marks per month with a domicile, and he received 1200 marks for his outfit and has a credit of 5,000 marks for materials to work with. This dentist accompanied the German army to Pekin. M. Lippold is 24 years of age and he wears the uniform of a military pharmacist. England equipped Mr. D. Pedly, of London, as a hospital dentist for service in South Africa in the war now going on between England and the Boers. It seems that nations are waking up to the fact that dentists are a necessity in military circles, for our country has just passed the first act in this particular and soon we will have twenty-seven dentists attached to the army. Our navy, as yet, is unprovided with dental service, in which it stands in great need. A little agitation will bring this about and then our defenders will be able to receive medical, dental and sanitary attention which they so well deserve.

GALVESTON DENTAL SOCIETY.

At a meeting of the Galveston Dental Society held in this city January 30, 1901, a committee was appointed to draft resolutions and in a manner endeavor to pour out their heartfelt gratitude to those benefactors, who so generously came at the call for assistance to the aid of their dental brothers.

Therefore, be it resolved that we as a body do hereby tender to the dental practitioners, dental societies, dealers in dental specialties and others, the sincere gratitude of the members of this organization, who were unfortunate in the recent calamity that visited our city.

Be it further resolved, that a copy of these resolutions be spread upon the minutes of this society, and likewise furnished to the various dental journals for publication.

A. A. Dyer,
W. S. Carruthers, Jr.,
R. E. Koehler,
Committee.

Galveston, Texas, February 6, 1901.

HOW SCIENTIFIC!

Dr. Cole, this summer, made a curious find, which he believes strengthens the theory that the Cliff Dwellers were a distinct race. In excavating at the newly discovered ruins near Espanola, of which mention has already been made, he uncovered a number of skeletons, buried in a sitting posture, with face to the rising sun. When he looked at the skulls, he found that every one had a complete set of double teeth. There was not a single incisor to be found. At first he thought that the teeth might have been worn down by eating of hard food, but skulls of individuals of both sexes and different ages were all found to show the same peculiarity. The skulls were shown to anatomists. They exclaimed in wonder over them, saying they knew of no existing race which shows the same peculiarity. It was definitely settled that the front teeth were not merely worn flat. The whole shape of the front double teeth was shown to be different from that of the incisors of ordinary men, and characteristically molar. The explanation was that these skulls had belonged to a race of grain-eaters—another proof of semi-civilization—and that long continuance of the habit had developed teeth suited to the race's needs.—*St. Louis Globe Democrat.*

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

666,143. Dental bridge work, August P. Johnson, Ada, Minn.
666,903. Dental clamp, Robert M. Mayes, San Antonio, Texas.
666,718. Fountain spittoon, Henry E. Weber, Canton, Ohio.
667,441. Dental mouth prop and mirror, Wm. Hare, Camden, Ill.
667,220. Dental engine, Wm. G. Hughes, Pittsburg, Pa.
667,464. Dental tool, Carl H. Seeger, and N. Dedrick, Manitowoc, Wis.
667,465. Universal joint, Carl H. Seeger and N. Dedrick, Manitowoc, Wis.

TRADE-MARKS.

35,801. Preparation for the hair, teeth and skin, Benjamin E. D. Stafford, St. Louis, Mo.

LABELS.

8069. Doctor Pease's Perle Paste" for a dentifrice, Charles G. Pease, New York, N. Y.

8870. "Perlodont" for a dentifrice, Charles G. Pease, New York, N. Y.

8071. "Cosmodont" for a dentifrice, Charles G. Pease, New York, N. Y.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall building, Washington, D. C.

If you wish back numbers of the DENTAL REVIEW, look at page 20 and there you are.

We have received a complete list of the members of the American Dental Society of Europe. This is a good showing.

The American Dental Society of Europe will meet Easter Monday in Cologne, Germany. Dr. Wm. Mitchell, London, is President, and Dr. W. E. Royce, Tunbridge Wells, is Hon. Secretary.

CONSTITUTION OF THE DENTAL BOARD.

The Colonial Secretary, Mr. See, appointed the board, in terms of section 3 of the Dentists Act. Following are the members: James Graham, M. B., M. S., M. P. (President); Edward Johnston Jenkins, M. B., M. R. C. P., M. R. C. S. E.; Alfred Burne, D. D. S.; E. Reading, George Vern Barnett, Henry Peach, D. D. S., Wm. Joseph Trickett, M. L. C., George Norton Russell.

Under the Dentists Act passed by parliament last session, it will be remembered dentists will be required by law in future, and after January 1, to register their names and qualifications with a professional board to be appointed for that purpose. The members of that board have now been nominated. The names were published yesterday, and it will be seen that they include those of professional men who have won the confidence of the public. The author of the Act, Dr. Graham, has been appointed president, so that the public will have some guarantee that the measure will be administered in accordance with the intentions of those who introduced and voted for the bill in parliament. One of the main provisions of the enactment, it will be remembered, is to the effect that some assurance should be secured to the public that persons practicing as dentists are really qualified to perform the duties committed to them. That these are important duties no one will hesitate to admit, and unfortunately it is within common knowledge that people have had certain ground for complaint in the past as to the manner in which those duties, sometimes highly paid, were discharged. Without qualification or supervision of some kind, such as this board can guarantee and provide, the public is left without protection against incompetent practitioners. That reproach should now be done away with by this dental board, acting under the authority of the colonial secretary.—*The Daily Telegraph*, Sydney, New South Wales.

SCHOOL OF DENTISTRY AT THE UNIVERSITY.

Since the passing of the Dentistry Act the Senate of the University has again had under consideration the question of the establishment of a school of dentistry, to enable persons to obtain a qualification within the colony. The matter was under the consideration of the Senate in 1897, but was allowed to remain in abeyance pending the necessary legislation to regulate dental matters. It is proposed that the school should be established by the University, in conjunction with the Sydney Hospital; and a joint committee—appointed from members of the Senate and members of the board of directors—is at present taking the necessary steps for the establishment of the school. The curriculum will cover a period of three years, during which the time of a student will be occupied for the whole day, either in attending at lectures and laboratory instructions at the University or at the out-patients department and laboratory for mechanical dentistry in the Sydney Hospital. In those subjects which are common to the dentistry course and the curriculum for medical students at the University, such as chemistry, physics, anatomy, physiology, and dissection, the dental students will attend the same classes as the medical students; but certain special courses will also be established for them at the University, in such subjects as dental anatomy, physiology, materia medica and therapeutics, pathology and bacteriology, and practical metallurgy. At the Sydney Hospital students will be under the instruction of the hon. dental surgeons of the hospital, and will be required to attend systematic lectures in surgical dentistry. In mechanical dentistry there will also be systematic lectures and laboratory instruction under a skilled mechanical instructor. The preliminary examination required on the part of dental students will be the ordinary matriculation examination of the University; but it is proposed that those students who have been bona fide engaged as apprentices to dental practitioners for a period of not less than twelve months before December 31, 1900, or have studied dentistry for a like period before the same date in a hospital with a special dental department, may be admitted to the curriculum without passing the preliminary examination. The joint committee of the University and the Sydney hospital, above referred to, is to meet shortly for the purpose of taking steps for the appointment of the necessary officers to enable the curriculum to be commenced next March.

TRI-STATE MEETING.

Editor Dental Review:—Your nice remarks in the January number of the Review were highly appreciated, I assure you. For several days after reading them I walked about town with my nose in the air and my chest all bulged out. The impression began to prevail among my friends and creditors that I had suddenly acquired wealth, and there was some talk of nominating me for township trustee on the Prohibition ticket, but it fell through. However, the increased self-respect resulting from reading your editorial leads me to hope that you will give me space in your valuable columns for a short letter.

I have decided to adopt a new role. From now on, I desire to be known as a Benefactor to the dental profession. Kindly begin Benefactor with a big B. That's the kind of a Benefactor I am. Just at present I am a Benefactor with a Mission. My Mission is to call the attention of your readers to the fact that there will be a dental meeting in Indianapolis, June 4, 5, 6, 1901, that they should attend. This is how it happened. In 1895, the state societies of Ohio, Michigan and Indiana held a joint meeting at Detroit. That it was a great success, no one has ever yet been able to successfully deny. None of the five hundred in attendance "wanted their money back." So, three years later, we had another one at Put-in-Bay. The same five hundred were there and they brought a hundred and fifty friends, just to show that there was no hard feelings. Three years have again almost rolled around and the six hundred and fifty at Put-in-Bay are preparing to come to Indianapolis and bring a couple of hundred friends, just for luck. Now, I have no doubt but that all of your readers have read of our Tri-State dental meeting, so it will be unnecessary for me to dwell on the excellence of the program, the wealth of clinics, or the social features to be provided, but my Mission as a Benefactor to the profession, is to call attention to the date of the meeting, the first week in June, and to urge your many readers to save up their pennies and wait for the Big Show. The Fat Woman, the Man That Can Drill to the Apex Every Time, the Siamese Twins, the Man that Cures Pyorrhea, the Two-Headed Girl, and the Rich Dentist, will all be on exhibition. So wait for the Big Show and all come. You never will regret it.

As this meeting will be conducted under the auspices of the State Associations of O-hio, M-ichigan and I-ndiana, it has been officially dubbed the O Mi! meeting and as such will thunder down the reverberating corridors of time.

Many thanks, Mr. Editor, for your kindness. If you print this without a special statement to the effect that you are "not responsible for the views of contributors" I will feel encouraged to come again some time.

Sincerely, GEO. E. HUNT.

ILLINOIS STATE DENTAL SOCIETY.

The Thirty-seventh annual meeting will be held in Rockford, May 14 to 17 inclusive. Following is the program in full as prepared by the executive committee and the supervisor of clinics. All members should make an effort to be present. The society is always glad to welcome reputable dentists, who are not members, from this and other States.

PROGRAM.

1. The Annual Address of the Society by the President. J. G. Reid, Chicago.

2. Report of Committee on Dental Science and Literature. A. W. Harlan, Chicago.

3. Report of Committee on Art and Invention. Hart J. Goslee, Chicago.

4. "Why Fillings Fail." T. F. Henry, Streator. Discussion opened by R. W. Hood, Monmouth. Continued by J. W. Cormany, Josephine D. Pfeifer, I. B. Newsome and others.

5. "Cement Anchorage for Fillings." J. J. Reed, Rockford. Discussion opened by W. V-B. Ames, Chicago. Continued by J. E. Keefe, S. F. Duncan, J. E. Hinkins and others.

6. "Dental Jurisprudence." Edwin Hedrick, Esq., Peoria. Discussion opened by C. R. E. Koch, Chicago. Continued by J. N. Crouse, E. Noyes, I. B. Crissman and others.

7. "Anomalous Cases of Malformed Teeth, with Suggestions as to Possible Causes." Israel P. Wilson, Burlington, Ia. Discussion opened by G. V. Black, Chicago. Continued by F. B. Noyes, J. H. Prothero, Geo. T. Carpenter and others.

8. "Preventive Dentistry." Garrett Newkirk, Los Angeles, Cal. Discussion opened by C. N. Johnson, Chicago. Continued by D. M. Gallie, G. W. Whitefield, Geo. B. Perry and others.

9. "Air Chambers—Uses and Abuses." Alfred O. Hunt, Chicago. Discussion opened by T. W. Pritchett, Whitehall. Continued by J. H. Woolley, G. A. Thomas, G. M. Brunson and others.

10. "Orthodontia." Illustrated with lantern slides. J. N. McDowell, Chicage. Discussion opened by C. DeWitt Lukens, St. Louis. Continued by A. E. Matteson, C. C. Corbett, Grafton Monroe and others.

11. "Submarine Gold." Illustrated by stereopticon lantern. George A. McMillen, Alton. Discussion opened by John E. Nyman, Chicago. Continued by L. W. Skidmore, E. H. Allen, J. E. Keefe and others.

12. "Antiseptic, Germicide and Disinfectant." A. H. Peck, Chicago. Discussion opened by R. N. Laurance, Lincoln. Continued by E. K. Blair, J. E. Hinkins, C. B. Rohland and others.

13. "The Physiological Function of Saliva." J. B. Dicus, Chicago. Discussion opened by F. B. Noyes, Chicago. Continued by C. P. Pruyn, W. A. Johnston, D. E. Coulson and others.

14. "Microbiology and Office Clinic." George D. Sitherwood, Bloomington. Discussion opened by G. W. Cook, Chicago. Continued by A. W. Harlan, E. R. Carpenter, J. M. Barcus and others.

15. "The Philosophy of Mastication, Relative to Artificial Dentures." B. J. Cigrand, Chicago. Discussion opened by E. J. Perry, Chicago. Continued by J. H. Kennerly, F. N. Brown, T. W. Pritchett and others.

16. Report of Supervisor of Clinics. J. E. Hinkins, Chicago.

CLINICS.

1. Harlan, A. W., Chicago: Pyorrhœa Alveolaris.

2. Cormany, J. W., Mt. Carroll: Gold filling, using Bonwill's mechanical mallet.

3. Hancock, J. E., Joliet: Porcelain crown.

4. Callahan, J. R., Cincinnati, O.: Gold and tin in definite proportions for filling.

5. Roach, F. E., Chicago: Practical application of the wedge-lock facing.

6. Corbett, C. C., Edwardsville: Amalgam filling, cement anchorage.

7. Lukens, C. DeWitt, St. Louis, Mo.: Orthodontia.

8. Taggart, W. H., Chicago: A. E. Peck's complete system for making porcelain inlay and restoration to absolutely fit the cavity.

9. McIntosh, F. H., Bloomington: A method of building up broken-down bicuspids and molars preparatory to receiving a gold crown.

10. Reeves, W. T., Chicago: Porcelain inlay or restoration. Exhibition of the Hammond electric furnace.

11. Brophy, Truman W., Chicago: Surgical clinic.

12. Wikoff, B. D., Chicago: A novel method of making a bridge.

13. Allen, E. H., Freeport: Gold filling.

14. McCandless, A. W., Chicago: (*a*) Setting crowns and bridges with gutta-percha, using Kerr electric annealer to soften the gutta-percha; (*b*) alteration of plaster model, adapting ideal dental base plate to insure snugly fitting denture.

15. Gilmer, Thos. L., Chicago: Surgical clinic.

16. Chappell, O. A., Elgin: Application and use of dead soft gold.

17. Ames, W. V-B., Chicago: Subject to be announced.

18. Pruyn, Chas. P., Chicago: Pressure anesthesia for removal of alive pulp.

19. Pfeifer, Josephine D., Chicago: Filling root canals.

20. James, A. F., Oak Park: Ladmore and Bronson matrix.

21. Carpenter, Elliott R., Chicago: Pyorrhœa at root bifurcations and its treatment with oxyphosphate of copper.
22. Cattell, D. M., Chicago: Filling a proximo-occlusal cavity in a biscupid or molar; lingual one-third with noncohesive cylinders or mats; occlusal two-thirds, including step anchorage with cohesive gold.
33. Royce, E. A., Chicago: Demonstration of the varying shades of the natural teeth in the same mouth as applied to artificial dentures.
24. Good, Robert, Chicago: Pyorrhœa alveolaris; Younger's method.
25. Johnson, C. N., Chicago: Preparation of cavities.
26. Duncan, S. F., Joliet: Gold filling, using the Berry electric engine and mechanical mallet No. 2.
27. Griswold, W. E., Denver, Colo.: Removable bridge.
28. Shryock, W. W., Fort Wayne, Ind.: Swedging seamless gold crown.
29. Crissman, I. B., Chicago: Labial cavity extending under the gum, filled with de Trey's gold, without rubber dam.
30. McMillen, Geo. A., Alton: Use of submarine gold.
31. Hunt, A. O., Chicago: Uses and abuses of air chambers.
32. Johnson, A. G., Chicago: A novelty for the assistance of annealing and carrying gold.
33. Bridges, J. S., Chicago: Porcelain inlay, demonstrating the Ash swedge.
34. Rohland, C. B., Alton: Subject to be announced.
35. Prothero, J. H., Chicago: Arrangement and occlusion of teeth.
36. Brown, J. O., Chicago: Contour filling, using Watt's crystal gold.
37. Slonaker, J. W., Chicago: Nitrous oxide gas.
38. Dittmar, G. W., Chicago: Gold filling.
39. Green, W. F., Evanston: Subject to be announced.
40. Davis, L. L., Chicago: Celluloid cement filling.
41. Case, C. S., Chicago: Restoration of facial contours by a combination of orthopedia and prosthesis; especially applicable for cleft palate patients.
42. Powell, C. B., Jacksonville: Treatment of root canals, demonstrating the use of a new broach holder of the clinicians own design.
43. Black, G. V., Chicago: Demonstrations of mallet force, using tuptodynamometer.

(Signed) C. R. TAYLOR, Streator,
Executive Committee.
J. E. HINKINS, Chicago,
Supervisor of Clinics.

OBITUARY.

Theodore Emmanuel LeCaudey, Doctor of Medicine, Officier of the Academy, Chevalier of the Legion of Honor, Honorary President of the Third International Dental Congress, Paris, 1900, Honorary President of the Dental Association of France, died February 12, 1901, at his residence, 116 Boulevard Malesherbes, Paris. Dr. LeCaudey had been in feeble health for some time. He retired from general practice two or three years ago and was taking a well earned repose when the grim messenger summoned him. Dr. LeCaudey was seventy-three years of age and was highly respected and esteemed in France as well as in Paris. We hope to publish later a full account of his life. Meanwhile we present our condolence to his family and professional friends. His remains were interred in the Cemetery Montmartre, February 14.

THE

DENTAL REVIEW.

VOL. XV. CHICAGO, APRIL 15, 1901. NO. 4

ORIGINAL COMMUNICATIONS.

ARTISTIC DENTURES.*

BY EDWARD A. ROYCE, D. D. S., CHICAGO, ILL.

Selecting the proper shades of porcelain teeth is one of the most important features of prosthodontia, and one in which our most skillful dentists signally fail. The efforts to imitate in our dentures the harmony of shading found in the natural teeth, have been so inadequate as to be of very little practical value, in fact most of the dentures are made up without the least regard for the artistic work done by nature in inserting teeth of so many varying shades in every mouth. I have watched with much interest and gratification the improvement in the prosthetic department of dentistry, and it has been with especial interest that the growth and perfection of the use of porcelain has been witnessed. From time to time the attention of the profession has been called to the very inartistic effects produced by the crowns, bridges and dentures of to-day, and I had hoped that some one more able than I would point out a way to remedy (in a large degree) this very grave defect in what should be the most artistic of all productions, but others have done so little in this direction I wish to invite you to study the subject with me for a short time this evening.

If we wish to select the bits of porcelain that are to represent the lost dental organs in full upper and lower dentures, we find certain rules given in all standard works, which if followed, will indicate to us the style of tooth required for the case in hand. These directions are the result of careful study and much thought by some of the best men that have ever worked in prosthodontia, and are good so far as they go, but how many here present, after they have studied carefully the temperament of the patient and decided, probably correctly, as to the size, color and shape of the tooth indicated, are fully satisfied with the appearance of the dentures after they are placed in the mouth? The features may have been restored in the best possible manner, the teeth may have been selected correctly, according to the temperament, and they may have been properly articulated and occluded, but after all this they look like store teeth, say what you may. And even if, as advised by some, you have substituted darker cuspids than those in the set, you have relieved the very artificial appearance but little. This annoyed me for years, and I finally concluded that the fault was largely due to the sets of teeth as made up for us by the manufacturers, and all the changes that we make, like putting in fillings, or placing a dark tooth to represent a pulpless one, or any other art we might use to imitate the ravages of wear or disease, could not give the natural appearance to our artificial work so much desired, but that some radical change was needed in the teeth as a whole. In our dental literature we find records of casts and measurements that have been taken to the end that our teeth might be of the proper size and shape, but the varying shades of the natural teeth are nowhere spoken of, and becoming convinced of the importance of this feature I began the examination of mouths with the natural teeth in place to ascertain wherein the shading of the artificial teeth differed from the natural.

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*Read before the Odontological Society, Chicago, Ill.

In our study of this subject we must have some standard by which to measure the shade of each tooth, and for this standard the upper central incisors of the denture under consideration were always selected. Some means being necessary to convey to you the different shades of the teeth in the mouth I selected o, or zero to represent the shade of the central incisors, using numerals to express the other shades—the higher the numeral the darker being the shade. Of course it is readily seen that a shade as a measure may vary according to the eye of the observer, but study and observation will educate the eye so that the proper shades will be easily selected. I did not fully appreciate the influence the second bicuspids and molars had on the appearance of the denture as a whole, so at first I did not include them in my records, but in a few of the later records I have given their shades, so you can see about how they compare with the other teeth. I excluded all mouths in which large fillings, dead pulps or other causes affected the shade of the teeth, and out of a very large number of mouths examined I present to you records of only about fifty; these were of all temperaments and all ages, from eight to seventy-two.

The youthful denture is always described as one of beautiful uniformity of color—a most misleading statement which I will prove by the first case recorded, a child eight years of age; the only anterior teeth that had erupted were the central incisors. The superior incisor was taken as standard or o, and upon comparison the lower central was found to be three shades darker than its antagonist. This shows at once that the variety of shades in the denture does not come from age, but is there from the time of eruption. The second case is of a child nine years old. The incisors were all in place, and in this mouth the upper lateral incisor was two shades darker than the central, which we take as standard, the lower central one and the lateral two shades darker. The age of the next was eleven, and the dentition had proceeded one step farther, as the cuspids were in place, and the record reads upper laterals two and cuspids three shades dark; lower centrals one, laterals two, and cuspids three shades dark. The fourth case was fourteen years of age and the bicuspids were erupted. In this case the upper laterals were three, cuspids eight and first bicuspids eight shades dark; the lower centrals one, laterals three, cuspids seven and bicuspids eight shades dark. Case five was sixteen years old and the laterals were three, cuspids five, first bicuspids six, and the lower centrals two, laterals four, cuspids six and first bicuspids six shades dark. These five cases are youthful dentures, in which the ravages of disease were not seen, and in which is produced in the greatest perfection the beautiful forms and coloring, than which nothing can be more artistic. Even in these perfect young mouths this great variety of shades is found.

Let us next look at case eighteen, twenty-two years of age. The record is lateral one, cuspid six and first bicuspid five; lower central two, lateral two, cuspid five and first bicuspid five shades dark. Again case twenty-two has lateral four, cuspid eight and first bicuspid five; lower central three, lateral four, cuspid seven and first bicuspid five. A similar variation in shades of the standard color will be found in every case; even case forty-five, which shows a most remarkable preservation of the color and form of the teeth at seventy-two years of age. In this case the laterals were two, cuspids seven, first bicuspids eight; lower centrals one, laterals three, cuspids seven and first bicuspids eight. The molars were included in the last three cases recorded, and they show positively that the molars, like all the other teeth, vary in shade from the upper incisors. This variation of shade is not in a dozen cases only, but I found only two cases in which there were other teeth in the mouth of the same shade as the upper central incisors.

Let us compare a set of teeth as furnished us by the manufacturers with one furnished by nature and see how they agree. In the former set the shading would be represented by 0, and would read central 0, lateral 0, cuspid 0, first bicuspid 0, second bicuspid 0 and molars 0—0; lower centrals, laterals, cuspids, bicuspids and molars would all be represented by 0. Compare this with case forty-nine of the record, central 0, lateral two, cuspid seven, first bicuspid five, second bicuspid four, molars four; lower central two, lateral four, cuspid seven, first bicuspid six, second bicuspid five, and molars four. When you note the difference in the shading of the two cases do you wonder our artificial teeth look so unnatural?

The observations recorded in the table which I present to you prove that it requires teeth of five or six different shades to make up a natural denture, either upper or lower. The upper centrals are the lightest, the upper laterals are one to three shades darker, the cuspids three to nine shades darker and are usually the darkest teeth in the mouth; back of them the teeth gradually grow lighter, but are never as light as the centrals. The same general order of shading holds good for the lower teeth; the centrals are the lightest, but are from one to three shades darker than the upper centrals, the laterals are darker than the lower centrals and the cuspids are again usually the darkest, the shades growing lighter as we proceed back from the cuspid. The ghastly appearance of the ordinary denture is due to the monotonous shading of the teeth used, and in no possible manner can we obtain a natural lifelike appearance except to produce in our dentures the same variety of shades that we find in the natural teeth. The foundation of the artistic denture should be an imitation of nature in its normal condition; the changes incident to age or disease are readily made, so that the appearance of the patient to herself and her friends is natural, and what would be expected and appropriate for her age, be she twenty or seventy-two.

The same lack of artistic knowledge is shown in shading the

Number.	Age.	Upper Central Incisor.	Lateral.	Cuspid.	First Bicuspid.	Second Bicuspid.	Molars.	Lower Central Incisor.	Lateral.	Cuspid.	First Bicuspid	Second Bicuspid.	Molars.
1	8	0	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....
2	9	0	2	.....	.....	.....	.....	1	2	.....	.....	.....	.....
3	11	0	2	3	.....	.....	.....	1	2	3	.....	.....	.....
4	14	0	3	8	8	.....	.....	1	3	7	8	.....	.....
5	16	0	3	5	6	.....	.....	2	4	6	6	.....	.....
6	16	0	2	6	5	.....	.....	2	3	5	4	.....	.....
7	18	0	1	4	5	.....	.....	2	3	4	4	.....	.....
8	18	0	2	5	5	.....	.....	2	3	6	5	.....	.....
9	18	0	1	3	3	.....	.....	1	2	3	2	.....	.....
10	20	0	1	4	3	.....	.....	0	1	3	3	.....	.....
11	20	0	1	4	3	.....	.....	2	2	4	3	.....	.....
12	20	0	2	7	5	.....	.....	2	4	8	6	.....	.....
13	21	0	2	6	3	.....	.....	2	2	4	3	.....	.....
14	21	0	1	4	3	.....	.....	1	1	3	2	.....	.....
15	23	0	3	6	4	.....	.....	2	3	6	4	.....	.....
16	22	0	1	6	5	.....	.....	2	2	6	6	.....	.....
17	22	0	2	6	5	.....	.....	1	3	5	4	.....	.....
18	22	0	1	6	5	.....	.....	2	2	5	5	.....	.....
19	22	0	2	6	5	.....	.....	3	4	7	5	.....	.....
20	22	0	2	5	5	.....	.....	1	1	3	3	.....	.....
21	23	0	1	6	3	.....	.....	1	2	4	3	.....	.....
22	24	0	4	8	5	.....	.....	3	4	7	5	.....	.....
23	24	0	1	5	3	.....	.....	1	2	4	3	.....	.....
24	24	0	2	7	6	.....	.....	2	3	6	5	.....	.....
25	25	0	2	5	4	.....	.....	3	3	5	5	.....	.....
26	26	0	1	6	4	.....	.....	2	2	5	4	.....	.....
27	26	0	1	6	6	.....	.....	2	3	6	6	.....	.....
28	28	0	2	7	6	.....	.....	3	4	6	5	.....	.....
29	28	0	2	4	5	.....	.....	2	2	4	5	.....	.....
30	28	0	1	4	6	.....	.....	1	2	6	6	.....	.....
31	28	0	1	5	4	.....	.....	1	2	3	4	.....	.....
32	29	0	1	3	2	.....	.....	0	0	3	3	.....	.....
33	30	0	3	6	5	.....	.....	2	3	6	4	.....	.....
34	30	0	1	7	5	.....	.....	2	3	5	5	.....	.....
35	33	0	3	6	4	.....	.....	1	1	5	4	.....	.....
36	35	0	2	8	6	.....	.....	2	2	7	6	.....	.....
37	35	0	2	6	7	.....	.....	2	3	7	8	.....	.....
38	35	0	2	7	4	.....	.....	1	3	6	5	.....	.....
39	38	0	1	8	5	.....	.....	2	3	7	7	.....	.....
40	39	0	3	7	6	.....	.....	1	2	5	6	.....	.....
41	40	0	2	6	5	.....	.....	2	3	5	5	.....	.....
42	50	0	1	5	5	.....	.....	1	3	5	4	.....	.....
43	50	0	2	6	5	.....	.....	1	3	6	5	.....	.....
44	70	0	1	7	7	.....	.....	2	3	8	8	.....	.....
45	72	0	2	7	8	.....	.....	1	3	7	8	.....	.....
46	25	0	2	7	4	.....	.....	4	5	6	4	.....	.....
47	20	0	2	8	3	4	4	2	3	7	8	8	4
48	30	0	3	7	5	4	4	1	2	7	6	5	4
49	30	0	2	7	5	4	4	2	4	7	6	5	4
50	19	0	1	8	3	4	4	2	3	7	8	8	5
51	23	0	3	8	6	5	4	2	6	8	6	4	4
52	24	0	1	8	6	5	4	2	3	7	5	3	2

teeth in crown and bridge work as in our dentures, and the unsightly appearance of these teeth often mar what would otherwise be a beautiful piece of work. The same necessity exists for proper shading here as in dentures, and the natural appearance of the mouth when the teeth are properly selected is one of the principal differences between ordinary laboratory work and the product of the trained artistic dentist. I believe teeth can be arranged in classes so that an average shading for each temperament could be made, which would be a guide to help us in making up our sets of teeth. I understand there might be some difficulty in manufacturing sets of teeth shaded up in this manner because of the uncertainty of the color of the tooth after fusing, but if there is a demand for them the teeth will be supplied from some source. I fully appreciate the fact that there is opportunity for an almost endless amount of work on this subject, as the data which I present to you to-night has required the examination of some three hundred mouths, but during my study of this subject I became so impressed with its importance and it so grew upon me that I decided to place the results before you in this somewhat incomplete condition.

The object of this paper is not to tell you just what shade of tooth should be used for different cases, but to awaken in the dentists a new interest in prosthetic dentistry, and especially in the artistic effects we can produce in our efforts to restore to faces their natural appearance. Art is to a large degree an unknown factor in the replacement of the dental organs, and if the dentists are ever to occupy the position which belongs to them as artists the present is the time to do so. There is a demand for the best efforts of the best men in our profession, and this demand will increase just as fast as we can demonstrate by our work that we are worthy of the name of artists.

ACTINOMYCOSIS.*

By Geo. W. Cook, D. D. S., Chicago, Ill.

Actinomycosis in man was first observed by Langenbeck in 1845. At that time he referred to certain of the moulds in connection with the disease. James Israel gave the first accurate description of the micro-organism in 1877. In 1878 it was obtained in pure culture by Bostroem, Wolf and Israel. Bollinger observed the disease in cattle in 1877. Ponfick succeeded in communicating it from one animal to another.

It was first thought to attack the jaws of animals, but has since been found in various parts of the body. The literature up to 1897 gives 577 cases in which the location of the primary lesion is as follows: Head, neck, and tongue, 316; thoracic cavity, 131; abdominal cavity, 27, and cutaneous skin, 27.

The Ray fungus has been found in various organs of the body; a case was reported in which there was found in the human ovary an actinomycotic process. Actinomyces has been found in heart, brain, intestine, lungs, mouth, muscles, and thyroid glands.

The cases which I have had the opportunity of seeing are as follows:

First, a Scotch girl about 24, good health, coming directly from the farm in the old country. Some little time before leaving the old country she had a severe toothache in the second lower molar on the right side. The tooth received no attention at that time. Soon she observed an enlargement buccally of the root; there was no pain. Two years later she fell into my hands, with tooth badly decayed. I recommended the removal of the tooth, which I at once attempted to do with forceps, but found it impossible. The roots were so firmly attached to the alveolar process that I found it necessary to take a fissure drill and surgically cut away the bone. After removing all the roots thoroughly, the parts were dressed for a few days, and the patient was lost sight of. But instead of the enlargement going away, it began to grow. The girl consulted several physicians, and was told that it was due to my faulty operating, possibly with unclean instruments. The girl, however, fell in the hands of a medical gentleman, who, after studying the case, recognized the pathological condition, operated, and the girl recovered.

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*Read before the Chicago Dental Society.

Second case: A man, 28 years, German, referred to me by a physician, to have a lower second molar on right side extracted. I met with the same difficulty as in the first case. After removing the tooth I found a sinus leading from the apical end of the roots into the soft tissue. I secured some pus that night. The next day, with a mount in glycerine, I could at once make out the ray fungus. Within a few days the patient was operated upon, the sinus was thoroughly curetted, patient put on potassium iodide; made a good recovery.

Third case: Ranchman, 56 years old, health always good, referred to me by a stock inspector at the Stock Yards. I found considerable enlargement along the buccal surface and angle of the left superior maxillary bone; the second and third molars being badly decayed. The enlargement was of about eighteen months' standing. In this case I was able to reach the sinus before removing the teeth, thus enabling me to find the small granules which can be seen without a magnifying glass. The microscopic examination revealed the ray fungus. The teeth were removed with the same difficulty as in the two previous cases. As the man had to leave the city, his home being in South Dakota, I sent him to a medical friend who was practicing near. I wrote the doctor what had been done and what the diagnosis was, recommending iodide of potassium, which was followed by the doctor. On last information the patient was considered cured. It would be interesting as well as instructive to us as dentists to discuss the relation of actinomyces to bacteria, but time and space will not permit of such consideration.

There are a few points I wish to call to your attention. It is well known to the bacteriologists that many of the moulds resemble the bacteria. For instance, some of the mycelium threads of actinomyces break up into short segments resembling bacilli. In fact, they may grow as coccus and rod forms, thus appearing as true bacteria. On the other hand, what has been called, until very recently, the bacillary forms, have proven to belong to a higher form, and many grow and appear as the ray fungi, the tubercular bacilli, the common bacilli of Asiatic cholera, diphtheria bacilli, and some of the bacteria, causing fermentation, show a branching when grown on certain substances. The thread formation in some of these supposed bacilli was first recognized by Klein, Maffucci and Metschnikoff, the latter placing considerable stress upon the thread formation, and classed them among the leptothrix or cladothrix. Morphologically, the ray fungus seems to be divided into a great variety of species. This apparent difference may only be due to the environment, as is observed in case of a number of bacteria. I have found in pyorrhea a micro-organism that grows in long mycelian thread, bacilli, and in some cases even as a coccus—all due to change in culture media, brought about by chemical change, also due to changes in temperature, light, etc.

Williams and Goadby have called attention to the thread forms found in dental caries. From observations made by various investigators I cannot admit of Berestneff's classification of typical and atypical ray fungus, but rather interpret such morphological difference as due to the causes above stated.

Further, Berestneff's classification into saprophytic or non-pathogenic and parasitic, or pathogenic ray fungus admits of the same criticism. It is well known that the pathogenesis of bacteria depends upon the food media upon which they grow—a chemical change here may affect their pathogenesis or destroy it altogether. Another factor which influences the pathogenesis of all saprophytic bacteria is the condition of the individual inhabited by them. A change in the protoplasm of the individual caused by changed environment may change what are seemingly saprophytic bacteria into parasitic disease-producing organisms.

What is true of disease-producing micro-organisms is true also of the acid-producing germs. I have been able to grow the so-called acid proof ray fungus in both acid and alkaline media, sometimes producing acid, and other times alkalinity in the food media. The ray fungus grown in saliva of different individuals shows marked difference in its reaction. The same is true of a variety of germs grown in saliva, which are scarcely ever found in the oral cavity, as well as those that are frequently inhabitants and those that are constantly found. It is a well-known fact that the most virulent micro-organisms lose their pathogenic properties when grown on artificial culture media. The reasons for this are as follows: The normal micro-organism begins, grows and multiplies in any solution capable of sustaining life, just so soon as the chemical composition of said food media changes; such changes always bring about a corresponding change in the growth and virulence of said micro-organism.

All food media contain certain electrolytes, viz., Na, K, Mg, Ca, together with certain organic acid and proteid matter, forming what is known as ion proteid molecule. Micro-organisms have a zymotic action, i. e., they tend to break up the molecule of the food media, liberating the metallic ions, which readily forms salt; the bacteria reduces the organic matter to NH, carbon dioxide and water. This change is brought about gradually and necessarily brings about a retrograde change in the life of the micro-organism, which shows itself in changed morphology, and virulence. This may help to explain why micro-organisms lose their pathogenic powers, and especially is this true of the ray fungus, which retains its virulence but a short time, if at all.

Regarding the pathology of actinomycosis, little can be added to what has been already written upon the subject. In the jaws, tongue and neck of man, it generally appears first as an enlargement, generally causing considerable disfigurement. Sometimes the primary lesion is a hard, red tubercle, or papular formation, with more or less induration. These papular forms continue to enlarge, necrosis and suppuration taking place in the central part, together with the formation of suppurating sinus, the center of which may show a tendency to granulation, and a process of repair takes place, while new sinuses are progressing at the periphery. In the necrotic tissue and pus a peculiar granular substance may appear, sometimes resembling sulphur granules. In the center of these granules is found a cluster of the ray fungus. In many of the tumorous formations may be found calcific deposits, especially in the center of the older growths. When this disease is found in the mouth or jaw-bone, infection takes place through decayed teeth, or where the continuity of the gum tissue has been disturbed.

Treatment. Clinicians have long since recognized the importance of iodide of potassium in the treatment of chronic inflammatory processes; especially in the removal of chronic tumors, as syphilitic gummata, chronic pleural exudates, and indolent ulcers, and such chronic specific inflammatory conditions as are found in pyorrhea alveolaris, actinomycosis, etc.

Reasoning from the pharmacology of potassium iodide, we would expect iodine and the iodides to influence such pathological conditions favorably. When potassium iodide is taken into the system it meets the fate of all electrolytic salts. It undergoes the dialyzing action of the cells by means of which it is broken up into its ions, the potassium ion and the iodine ion. The potassium ion soon unites with some acid radical, and goes off as potassium chloride or potassium carbonate, etc., while the greater part of the iodine is eliminated by the kidneys (a small quantity by the saliva and the sweat), a certain definite amount of the iodine enters into a loose chemical union with the protoplasm of the cell, forming what is called the iodine proteid compounds. This is especially true of the mucus secreting glands, which seem to have a greater affinity for iodine than the other tissues of the body. And right here is where these malignant pathological conditions primarily originate. These loose iodine proteid compounds very slowly break up and liberate free iodine, which accounts for the fact that iodine is liberated from the body for months after the administration of iodine is discontinued. This slow liberation of free iodine in the tissue gives the iodine a chance to act as a mild irritant to the cells, causing an increased functional activity of the cell, thus necessarily increasing food supply, which in turn increases the power of reparative process. Further, this irritating action increases leucocytosis, and cell proliferation, which, according to Mallory, increases the phagocytic action of the cell, thus causing the elimination of bacteria and other foreign matter. This is the real cause for the so-called absorption of new growths, as syphilitic gummata, or chronic exudate, as is sometimes found in cerebral spinal trouble. This action is simply analogous to the action of irritants applied to the skin for the removal of new growths and inflammatory processes. If irritation simply increases cell life of healthy tissue, and which calls for an increased flow of blood and lymph to the parts, which carries away the dead matter, destroyed by the phagocytic action of the leucocytes and newly formed tissue cell, this action of iodine renders it from a pharmacological standpoint a specific in all conditions in which internal cell irritant is indicated, just as croton oil or mustard plasters for surface lesions; but, in addition to the irritant effects, iodine has an antiseptic action, as it shows a strong affinity for some of the micro-organisms which are causing the internal lesions, therefore it acts in a twofold way, irritating the cell, causing cell proliferation and increased phagocytic action, and showing a special antiseptic property for certain forms of micro-organisms. It was only within a few years that the medical profession have recognized the internal treatment for certain local lesions well known to be of an infectious nature. Less than five years ago I heard an eminent lecturer on pathology and surgery say that this was solely a surgical disease; but to-day the weight of evidence is in favor of the potassium iodide treatment. Dr. Sawyer reported before the Iowa State Medical Society last May seven cases of actinomycosis, diagnosed as such microscopically, which were treated with internal medication, patients having all recovered. My reasons for discussing this part of the subject at this time was to direct your attention a little more to the general constitutional treatment, to some of the local conditions which come to us as dentists, but which is no less a local infection than that of a boil.

LOCAL DENTAL SOCIETIES.*

By C. N. Johnson, L. D. S., D. D. S., Chicago, Ill.

If the record of human attainment be carefully studied from almost any point of view it will be seen that the greatest results have usually been obtained by united effort. It is true that men singly have often accomplished notable and in some instances even phenomenal results, but the stimulus of their endeavor may ordinarily be traced back to association with their fellow-men. No real hermit has ever given to the world anything of importance in the way of material advancement. A man in order to develop the best there is in him must touch elbows with other men; he must experience the quickening influence of a common humanity and respond to the impulses which at some time and in some manner assail every individual, urging him to the performance of that which may mark him above the ordinary of his fellows.

This spirit of association has done as much for the professions as any other one factor in their development, and in no profession is this more eminently true than in that of dentistry.

Take away association work from the history of dentistry and that history would require to be rewritten—with much abbreviation. It would practically be the proverbial story of "Hamlet" without Hamlet. Even the spirit which induces men to write for dental journals is largely engendered as the result, more or less directly, of society work, so that dental periodical literature in general is much beholden to associations for its chief source of interest.

Nor could the journals ever hope to take the place of societies in the profession any more than can society work do away with the need of journals. The printed page is never quite so inspiring as the spoken word, and the personality of a man as we listen to him and talk with him is one of the charms which makes professional life well worth the living. Humor is an essential element —more essential than most people believe—in the highest development of man's best character, but from the very nature of things humor can find small place in dental periodical literature. In societies, on the contrary, if one watch closely the progress of events, humor is a constantly recurring factor in all the proceedings, whether in the reading of papers, the discussions, or even in the transaction of ordinary business. The individualities of the different members stand out so prominently as to be a constant source of entertainment to the student of human nature, and he who cannot extract endless humor from a study of the peculiar traits of character exhibited in the progress of an ordinary meeting must be dull indeed of intellect.

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*Read before the Odontographic Society of Chicago.

This is particularly true where the members are well known to each other from long association, such as those who habitually attend local societies. These societies usually meet monthly, and in this one feature of their character there is something of a sharp line of distinction between them and the more formal bodies known as National or State organizations. There is a better opportunity for personal acquaintance, a readier road to strong personal friendship and a happier blending of the social with the scientific than is possible where the members meet only once in a twelve-month. In a local society there is a sort of family pact, which insensibly grows up among the members and leads to a companionship and a bond of sympathy which forms one of the chief delights of society intercourse. Men get closer together in this way than is possible where the meetings are held so far apart.

There is also less formality and a greater latitude of speech and opinion, so that more freedom of manner is generated. This is of especial benefit to the diffident and hesitating among the members, and it is particularly encouraging to the young man who is just entering the profession and engaging for the first time in society work. There would seem to be two principal functions for the local society to fill—the one of bringing out young men and developing them along the best lines for society usefulness; and the other, the harmonizing of professional interests in localities where the membership of the profession is limited.

The essayist believes that in these two factors lie some of the most important considerations for the future development of dentistry. If we are to have careful, thoughtful men in the profession—men who have the proper professional instincts and the right scientific spirit—we must begin the early training of our young men in society work at a time when their efforts are readily directed into worthy channels, and when their enthusiasm is sufficient to make them a potent factor in the prosecution of any work in which their sympathies are enlisted. Many a man of undoubted ability has allowed his energies to go sadly to waste or be wholly misdirected as the result of an unfortunate bent in his early professional life. There are men in dentistry to-day, unheard of by you or me and unknown to the profession generally, who might have graced the pages of our literature and lent a healthy impulse to the development of the science and art of dentistry only for an early stunting of their capabilities by some unhappy bias or some unworthy influence.

It should be the office of the local dental society to gather these young men into the fold and give them an active share in society experience. It will not suffice merely to vote them a membership—they must be given a vital interest in the society by reason of some service which shall identify them more intimately with the workings of the body. They should be invited to read papers and should be assigned certain subjects for especial study and presentation to the society. They should also be appointed on committees—always, of course, in conjunction with some of the older members of the society, so that they may thereby gain the benefit of mature judgment in the conduct of society affairs. When a paper is read by a young man, particularly if it be his maiden effort, the old wheel horses should be so charitably disposed as not to launch at him in a tone too severely critical. They should remember that every word of an older member in the discussion of his paper is weighed as of momentous import by the young man who has just tremblingly sunk into his seat after his initial attempt to entertain the society. The world is whirling dizzily about his ears at that moment, and he is strung up to such a pitch of excitement that he is acutely sensitive to anything in the way of derogatory criticism, particularly if it comes from an old time member whose word is expected to have more weight than anything he might say in controversion. If ideas are advanced in the paper which seem radically in defiance of established principles there is always a pleasant way of calling attention to the fact without too severely wounding the sensibilities of the essayist. In short, these young men should be treated with consideration until they are sufficiently broken in to the society harness to submit to a reasonable degree of chafing. A colt may be managed with little difficulty by using judgment, care and kindness, but if you go at him with a club ten to one you make a balker of him. It is something the same with young men, and it is safe to say that there is to-day in the profession many a man who is balking as the result of early harsh treatment at the hands of older men.

And yet there is another side to the picture. Young men in engaging in society work should not allow themselves to be too sensitive to criticism. They should remember that when a man advances his ideas before the public he is to a certain degree placing himself on trial, and if his statements are critically weighed it is only the natural order of events and not to be resented or taken too much to heart. There is one thing a young essayist should invariably remember—that criticism of a paper or the ideas contained therein is not necessarily a criticism of the essayist himself, and should never be construed into a personal affront. Men cannot always be of the same opinions, and it so befalls that frequently those bearing the closest personal friendship for each other are found at the widest possible variance in certain matters of belief. I confess that to me it is one of the most delightful charms of society work that I may often find myself battling royally with a fellow member over some point of practice, and then the next instant put my arms about him with a sense of the deepest brotherly love. These things are the leaven of society work, and we must have not only the leaven but a little of the sauce to make our proceedings altogether palatable. So the young man must learn to preserve his soul in patience and fortify himself against faintheartedness in the face of well meant contention.

The office which local societies may fill in the promotion of professional interests in outlying districts, where the number of practicing dentists is limited, is well nigh beyond computing. There seems to be a proneness—or at least there has been in the past—on the part of practitioners so situated to persistently misunderstand each other. This misunderstanding has almost invariably led to endless bickering, spite, envy, jealousy and general ill will. It has been the exception rather than the rule for practitioners in towns where there were only half a dozen dentists to sustain cordial relations with each other. This was not because the men were intrinsically antagonistic to each other, but because of evil report being carried from one to the other, usually by bantering patients, who seek thereby to gain an advantage for themselves, and who do not stop this side of scandalous misrepresentation to generate discord and rivalry which they hope to turn to their own profit. In the case of practitioners who are not cordial with each other, all of these misrepresentations are readily believed, and are harbored up against a competitor until the utmost ill will exists. Remember that ordinarily this ill will is based solely on the reports of outside parties. As soon as men allow themselves to listen to this evil gossip they begin to drift apart and shun each other till a mountain of prejudice is built between them so high that neither can look over it. It is about this time that each man is willing to believe everything bad of his fellow, and to impute motives to his every act, which if in reality based on fact would make of him a shining member of the cloven hoof brigade.

The only possible cure for this is to become better acquainted with each other, so as to talk over these matters cordially and frankly, and come to an understanding on all questions calculated to engender discord. A man may readily be as good as he is painted by his friend, but he is never so bad as he is painted by his enemy, and no matter how unpromising a competitor may be, there is always something good in him if it is only dug out. It has been the experience of many a worthy man that he has sadly drifted away from his fellows and become a misanthrope and recluse all because of some silly misunderstanding which really had nothing of essential importance in it. It should be an adage with every liberal minded man to cultivate charity as among the chief virtues. Never wholly condemn a man till you know him —when you do know him you may not condemn him at all.

The best means for dentists to know each other is to meet regularly in society work and take each other by the hand, look each other in the eye and sit down with each other at the same table. This will often break the barriers of prejudice and petty spleen, so that a new light is revealed which had never before been dreamed of. It would be a revelation to many of those who to-day are standing aloof from each other to be able to see behind the cloak of their own illusion and discover the inherent good in those whom they consider wholly bad. Nothing is more potent to bring this about than properly conducted local dental societies.

MATRICES FOR APPROXIMAL GOLD FILLINGS.*

By Geo. E. Hawkins, D. D. S., Chicago, Ill.

Ours is a profession in which details are of the utmost importance. He who would succeed as an operator must thoroughly grasp and carry to their full fruition all minutiae, though it may require intense and earnest labor. It is only in this way that the ideal is approached, and even then, however conscientious and painstaking he may be, failure oftentimes will be the result. To the man bent upon doing his best when these wrecks loom up in his path there will come a grim determination to seek further knowledge and profit by defeat. To keep clear of these dangerous shoals he will press vigorously forward, resolving that no duty, however small, shall be neglected, thereby giving to those entrusted to his care the best that is within him.

With the idea in view that a mite may be added to relieve the dull monotony of every day work, I wish to present for consideration a little appliance that has been of great assistance to me.

I am well aware at the outset of the opposition to be encountered in entering upon a discussion of the matrix, some of our best operators having thundered against it. Learned articles have been written, followed by able discussions to prove that gold fillings cannot be properly inserted when a matrix is used.

"There is but one way," says Dr. Ottolengui in his Methods of Filling Teeth, "to produce a perfect approximal filling; that is to obtain sufficient space so that the gold may be made to extend over all margins and bulge beyond the normal contour, so that when all is trimmed away a perfect filling is produced at all parts, and such contour that the teeth returning to normal position will knuckle." "This," he adds, "is impossible with a matrix."

Direct pressure is one of the fundamental principles in condensing gold, and the more thoroughly the operator grasps this the more certain he is of success. The inherent qualities of gold admit of no deviation. This inexorable law is as prominent as was Jupiter among the Olympian gods, much as it may be desired to evade it. To pay the homage demanded by gold a nicely adjusted matrix will be of inestimable value, Dr. Ottolengui to the contrary notwithstanding.

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*Read before the Odontographic Society, Chicago, Ill.

It is not the purpose to assert that distal approximal cavities in bicuspids and molars cannot be properly inserted without a matrix, but that the operation may be rendered much easier to both patient and operator will be apparent to all who will give the matter the requisite amount of care and study. This is the pivotal point upon which the whole matter rests, as an accurate comprehension of the limits and possibilities of the matrix is necessary. It must not be inferred for one moment that because a compound cavity has been transformed into a simple one that all trouble ceases, for if such should be the case ignominious failure will be the result.

How often do we see fillings inserted in the mesio-approximal cavities of bicuspids and molars with no attempt to contour, leaving distinct V-shaped spaces, and upon inquiry find the fillings to be of long standing, and as far as can be ascertained, are still keeping the teeth at these points immune from caries. However, upon further inquiry it will be found that that side of the mouth is used very little for masticating purposes, owing to the food becoming impacted between the teeth. No better argument for contour fillings could be advanced, for the mere preservation of tooth structure is not all that is required. To insert contour fillings in mesio-approximal cavities ample space must be secured. Do not use rubber strips; they are relics of the past and have no place in the modern dentist's office. Whether the late Dr. Bonwill, than whom no greater dentist ever lived, was the first to introduce pink gutta-percha as a separating material, I do not know, but he brought it prominently before the profession for that purpose. Its use causes no soreness, and all space needed can be obtained with little or no discomfort to the patient.

Now as to the kind of matrix. There are so many different forms in use that it requires good judgment to discriminate between them. It must be admitted that the personal equation enters largely into this as in all operative procedures. Since the introduction of matrices almost every conceivable kind of metal has been used for the purpose, and in as many different ways as could be devised. The one almost universally used has been a band of thin metal encircling the tooth. The objection to this in my hands has been in holding it in place, and also that the adjacent teeth must oftentimes be filed between to admit the band. Or if held in place, as the Brophy matrix, great care must be taken or the contour is almost entirely obliterated. Others are held in place by more or less elaborate appliances, which interfere with the work and are difficult of adjustment.

The one to which I would call your attention as having most points in its favor is the Woodward. For simplicity and ease of adjustment it is not equaled. It is not necessary to mutilate the adjoining teeth in order to get into place. As will be observed, it consists of a thin piece of metal, with a lug upon either side, through which passes two screws. When slipped between the teeth by slightly turning the screws with a small wrench, the matrix is soon securely in place. If any more space is needed, by setting the screws firmly it will be readily accomplished. In packing the filling at the cervix, if the matrix is pressed too tightly against the tooth, slightly loosen the screws, when the gold can be carried over the margin and thoroughly condensed. After this is done the screws can be set as firmly as may be required. The disto-buccal and disto-lingual margins are in full view, and gold can be readily packed over them. Tin and gold, noncohesive, semicohesive foil or any of the so-called soft golds may be used as the operator wishes, finishing with rolled gold or gold and platinum.

A word as to the annealing of gold. While this is not strictly speaking germane to the subject, still I cannot refrain from saying something along that line. And yet it may be presumption in view of the classic manner in which this matter has been handled by Dr. C. N. Johnson in the *Dental Cosmos* of March, 1899. Recently standing by the chair of a clinician who was inserting a large mesio-occlusal filling in an upper first molar, I was led to believe that many operators have not given the annealing of gold sufficient consideration. He was using No. 2 cylinders. They were first placed on a piece of mica, put over an alcohol flame and allowed to remain until used, thus becoming so thoroughly annealed that anything like proper adaptation to the cavity walls was out of the question. Gold in the form of cylinders or foil, as it comes from the manufacturers to-day, requires little annealing until the filling is nearly completed. Hence do not overanneal and expect to make a water-tight filling.

THE RELATIVE EFFECT OF A COMMON ENVIRONMENT UPON ENAMEL FROM DIFFERENT TEETH.

By W. D. Miller, M. D., D. D. S., Berlin, Germany.

In the Dental Review for February, pages 184-5, will be found a report of some experiments made by Dr. Bogue on the above subject, in which he found that pieces of enamel subjected to the same conditions were influenced to very different degrees, and that different pieces showed also very great differences of loss in weight. The object of this note is to call attention to experiments of this nature which I made eighteen years ago, and which were reported in the *Independent Practitioner* for 1883 on pages 632-33, as well as in my book on Microorganisms of the Human Mouth, page 196. The account in the *Independent Practitioner* reads as follows:

I broke up several teeth, perfectly free from caries, but of different density, into fragments of various sizes, and put the pieces in a mixture of saliva and bread. The mixture was kept at a temperature of thirty-seven degrees centigrade for three months, being renewed in that period five times. I then showed a number of these pieces to a well known practitioner of thirty-three years' standing and asked him if they were not strange cases of caries. He replied, no, he met with such cases daily. The dentine was, in many of the pieces, softened through and through, and in all to a considerable depth. Where the softening had penetrated through the dentine to the inner surface of the enamel the latter was coated with a layer of white powder exactly as we find it in natural caries; the edges of the enamel (where the pieces were fractured) were reduced to a powder from one-quarter to one-half mm. in thickness; cracks in the enamel presented an opaque, whitish appearance, and in some cases could be penetrated by a fine-pointed instrument. At the neck of the tooth the dentine had become softened, though not as extensively as in the crown; the edge of the enamel was rough and fragile, and in some cases an instrument could easily be inserted between it and the dentine; on the grinding surface, where the tooth was of very poor structure and full of fissures and pits, the tissue had been reduced to a soft, cheesy mass, such as we so often meet with in third molars. In two cases, evidently owing to a defect in the structure, the teeth were attacked on the cusps and reduced to powder; where the acid had penetrated through the enamel its effect was seen to spread out in all directions in the dentine; where the enamel was very hard and dense, without crack or blemish of any kind, it had not even lost its luster. In fact, all the phenomena of white decay were here produced with the greatest accuracy. If the mixture was allowed to stand until the reaction became alkaline, or if the pieces were exposed to the actions of the air, or to various articles of food, such as coffee, tea, tobacco, juices of fruits, etc., all possible shades of color ever exhibited in carious dentine were produced. This experiment shows clearly enough what a vast difference the structure (density) of the tooth makes in its resistance of decalcification, and offers an explanation of the question why all teeth do not decay alike. A dense tooth, covered with enamel, intact at every point, would probably resist for years the action of an acid saliva to which a soft, defective tooth would succumb in a few weeks.

From this it will be seen that Dr. Bogue's results furnish a complete confirmation of mine. I propose, however, to discuss this question more at length at some subsequent time, and wish at the present time only to call attention to some of my earlier experiments, which, like many others of that period, seem to have been forgotten.

KINETICS OF THE MALLET.*

By Dr. Clayton H. Stearns, Owatonna, Minn.

There are but two points in the mallet which affect the character of the blow; the weight, and the material.

The first is of account because it determines the velocity, and the velocity determines the character. According to the law, the kinetic energy of a moving body is proportionate to the mass and square of the velocity conjointly. As per example:—A mass of 1 ℔ moving 1 ft. per second equals 1 ft. ℔. A mass of 10 ℔s moving 1 ft. per second equals 10 ft. ℔. A mass of 1 ℔ moving 10 ft. per second equals 100 ft. ℔. Therefore, taking two mallets, one weighing eight, and another one-half oz., considering then as regards the amount of energy developed, we find that the lighter one has but to be given four times the velocity to develop the same amount of energy.

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*Read before the Minnesota State Dental Society.

Right here, however, we find another law operative, that is, upon the impact of two bodies where the co-efficient of restitution is low, the dispersion of the lines of force is directly as the mass of the impacting body, and indirectly as its velocity; thus—a 100 ℔ blow from a 10 ℔ body will penetrate ten times as far as a 100 ℔ blow from a 1 ℔ body, providing that ideal conditions could be obtained.

These laws act in two ways to affect the character of the blow: First, by enabling the lighter mallet to do the same amount of work with much less energy. Second, by enabling it to develop a much greater energy with the same dispersion of the lines of force.

The quality of the material of which the mallet is made, with regard to its elasticity, affects the quality of the blow in two ways. First, where the co-efficient of restitution is low, by absorbing a larger proportion of the energy in producing change of form, thereby extending the period of transference of the balance of the energy, resulting in the utilization of a much smaller amount of the total energy expended, in the accomplishment of the work.

Second, where the co-efficient is high, the amplitude of the change and restoration determines the time of transference. Consequently, the concentration or dispersion of the lines of force, and the proportion utilized, or in other words, which receives the greater proportion of the blow, the gold or the patient?

Taking the above for a test, we conclude: The lighter the mallet, consistent with practice, the harder the surface, and the higher the co-efficient of restitution, the greater the proportion of energy developed absorbed by the gold. The heavier the mallet, the softer the material; the lower the co-efficient, the greater the proportion received by the patient.

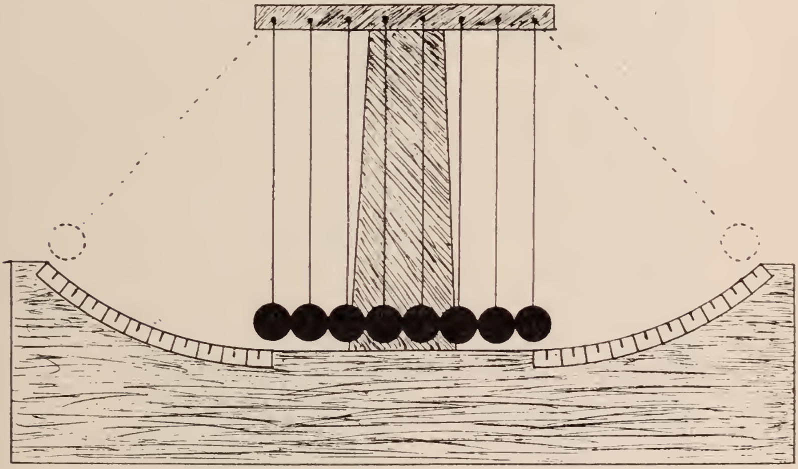
DEMONSTRATION.

We have an apparatus familiar to every student of elementary physics, only in this case the balls are made of hardened steel. They are, in fact, antifriction balls, such as are used in turntables, etc.

The same as in bicycles, except these are larger. Steel is used because it combines the highest co-efficient with the least amplitude. A scale is added at each end for convenience in measuring the reaction.

For the first experiment we lift one ball to the full length of the scale and let it fall. As a result of the impact the opposite ball flies off almost to the full length of the scale, and as it drops back the operation is repeated again and again, until they gradually come to rest. But we find only two balls are affected, the two on the outside, the other six remaining at rest.

From this we can make several deductions. The principal one is, that in using the mallet on a steel plugger the force is transmitted almost entirely, so that we may consider the blow as delivered directly on the filling.



Next we see that the penetration of the force of the blow depends entirely on the weight of the body delivering it. Thus—we raise two balls, letting them fall together, we see the same phenomena repeated except that two balls are driven off from the other end, and they gradually come to rest as before, but always two balls moving from each end. And the same with three balls. We thus show that the penetration of the blow depends entirely on the weight of the moving body, and that the tension or intensity of the force depends on the velocity.

We now take a lead ball weighing 1½ times the steel ones, but with a very low co-efficient. Letting it fall as before we see that it moves the further ball less than half the length of the scale, showing a low tension but deep penetration as three balls are moved. We now cover the steel ball with a section of a rubber bulb, making a high co-efficient with a wide amplitude of change. Letting it fall as before we find the tension is very slight, the last ball moving but a short distance. The penetration is, however, far beyond the ability of the apparatus to measure, as all the balls move as one.

A CASE OF NASAL PROSTHESIS, WITH PERFORATION OF THE PALATE. ALSO A METHOD OF RETENTION OF ARTIFICIAL DENTURES IN DIFFICULT CASES.*

By Dr. O. A. Weiss, Minneapolis, Minn.

By the program you will see that I was scheduled for an essay. What I have to offer can hardly be called an essay, and I wish to disclaim any credit for having been so scheduled. It was at the request of a member of the executive committee that I present this case to the association. The case we have here is one of those unfortunate cases which fortunately we do not very frequently meet with. It is a class of cases that, strictly speaking, do not come within the domain of dental surgery, but they are usually treated by the dentist, who by virtue of his mechanical skill, combined with his artistic sense, seems to be best fitted for the treatment of these cases of prosthesis.

You cannot realize what mortification such an unfortunate person continually experiences when brought into contact with persons other than those of their immediate household or as they pass along the street. It is almost impossible for even the best cultured to refrain from turning and looking at such a person when meeting them on the street, or looking at them in their presence, and, of course, such a person knows well they are always looking at their deformity.

In the treatment of cases of this kind we cannot make as good a substitute as we can of the teeth, but still we can make a substitute to relieve the patient of a great deal of mortification he feels in the presence of other people.

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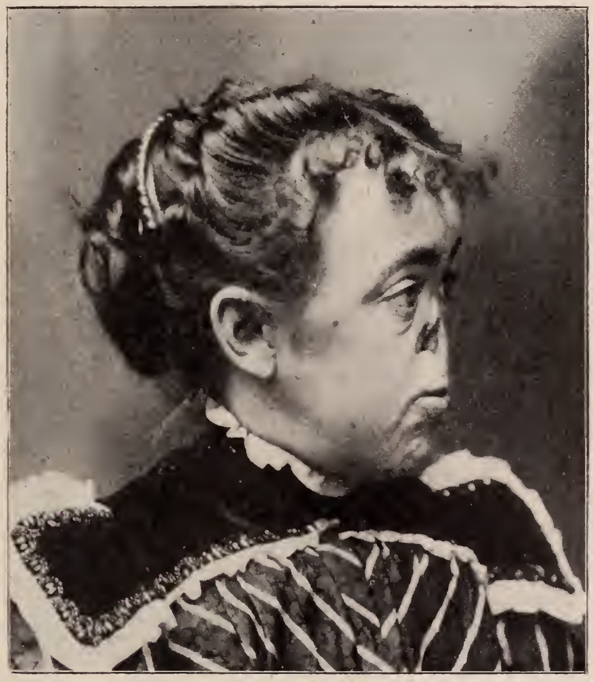
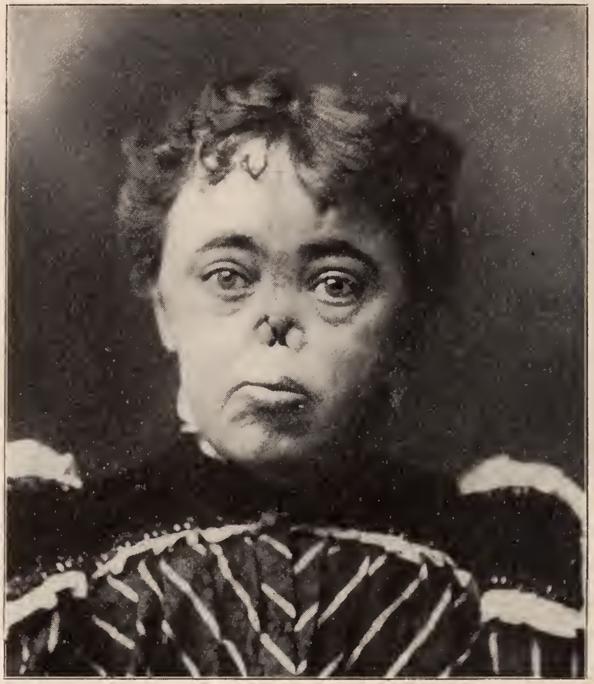
*Read before the Minnesota State Dental Society.

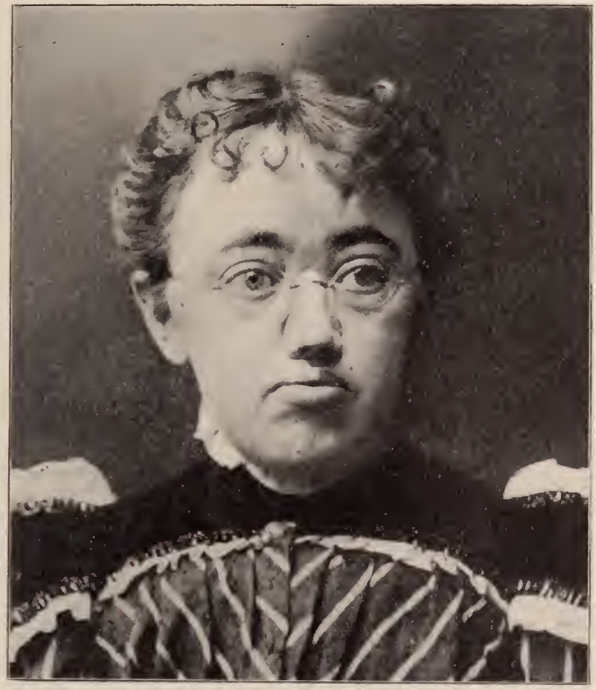
In considering cases of this kind there always arises the question as to what was the cause of such defect or deformity. I do not know that I can enlighten you much in regard to this case. The physician who referred this case to me did not have the patient in charge when the trouble arose. This patient is now about thirty years old and the trouble arose when between twelve and thirteen years of age. She had treatment for the case in this section of the country without avail. She went to Chicago and was treated there without any better results, and she finally went to New York, where a cure was effected, the treatment extending over a period of about two years. It was pronounced as ulcerative catarrh. That was all I was able to learn of the history of the case. In addition to the destruction of the nose there was also a considerable destruction of the hard palate, and as she had lost all her teeth, too, the case was somewhat difficult to treat in full. Now the method of restoration I employed in this case I can simply show you by the plaster model I have here. This model of the nose (indicating) is



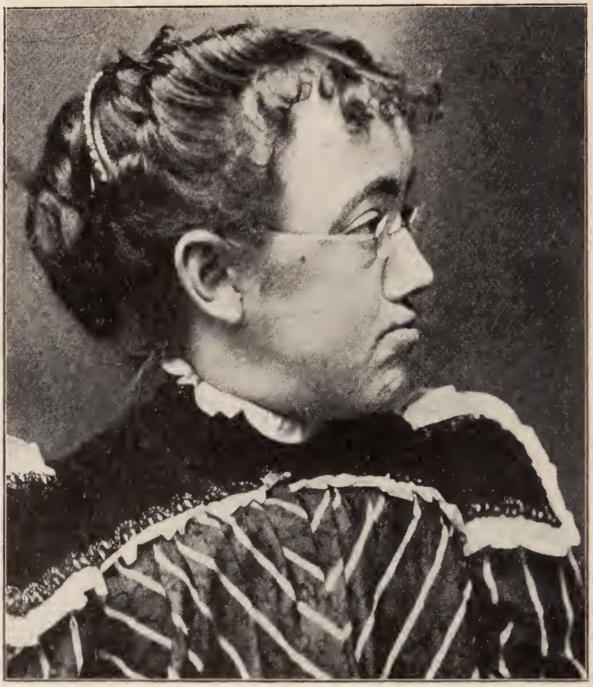
one made by my assistant from the completed nose to place on the plaster cast because it showed to better advantage on the plaster cast than the wax model did. You can see what the effect is on the plaster cast with the restoration of the nose and you can also see what the condition of the face was. I have here the different steps in the work, outlining what was done. This opening (indicating) was enlarged simply to place the model upon it. I have here another and smaller cast of the central portion of the face upon which the nose was vulcanized. This shows what the nostrils were like and these were enlarged about as much as I thought they would permit of distention. Then the wax model of the nose was placed in position upon this cast and the case flasked for vulcanization. A good deal of judgment is necessary as to the correct form of the nose on a face of this kind. I had no photo to aid me. I made several models before I got one that I thought was in harmony with the face. You cannot put any kind of a nose on any kind of a face, but you have got to make a nose to correspond with the other features, and after



several trials the nose made seemed to best suit this case. You will notice there are two projections that extend into the nostrils on this little cast of the face (indicating) and these nostrils were enlarged sufficiently so these little projections of the wax model could be placed directly into them, then the piece was invested in a flask and vulcanized in the ordinary manner, making a vulcanite nose. The nostrils were then completely cut through in the vulcanite nose and communication made by drilling through these projections here (indicating) so she is able to breathe through her nose. The nose was then painted in oil colors and adjusted and held in position by wearing glasses.



I spoke of the teeth being gone and of the perforation of the palate which made it difficult to adjust the artificial denture, and to make matters still worse it was one of the smallest palates for which I ever had occasion to make a plate. The palate was scarcely larger than a silver half dollar. These (indicating) are not the plates or the models of the plates; I simply had my assistant make a model to show the articulation and springs by mounting a pair of old plates I had in the office. I have vulcanized on the maxillary surface of the plate a flexible rubber projection which entered the perforation of the palate. This projection has a slight enlargement on the nasal surface which keeps it forced up through the perforation by the elastic action and was to hold the plate in position, but I found it was not practicable; i. e., it was not sufficient to hold the plate in position in the mouth. Then I had resort to some other device. The character of the tissues of the cheek was such that they fell right in the mouth and covered up everything. In trying to make an examination it was necessary to pull the cheek away. There seemed to be a great amount of soft, flabby tissue which was in the way. The ordinary coil spring used to retain dentures I felt was not satisfactory in a case of this kind on account of the falling in of the cheeks. Then, too, they are not very cleanly, the coil being like a tube which will permit more or less accumulation, so I devised a spring of this form (exhibiting), a single coil spring with the ends bent at right



angle and attached to the plate by entering little tubes inserted in the plate.

There is only one thing I feel it necessary to call further attention to in regard to this, and that is the adjustment of that spring, the two points of adjustment. The lower attachment should be considerably anterior to the upper attachment when the jaws are closed, because as the mouth is opened the lower jaw not only is depressed, but is retracted somewhat because of the peculiar motion that the articulation makes. Now if the jaw is open and this lower attachment were posterior to the upper attachment the tendency would be to push the upper plate forward out of the mouth. That is the point that must be borne in mind in trying to adjust a spring of this kind, the lower attachment must be anterior to the upper attachment. I have never had occasion to use this form of spring except in one other case. It is not patented, and any of you that want to use that form of spring are at liberty to do so. I cannot tell you how successful you would be in all kinds of cases, but in this case it worked very nicely. She was unable to use the plate until after I put in the springs, but after they were put in she got along very nicely. She finally got along altogether without the springs. She broke one of the springs or did something with it (she lives in the country) and intended to come to town to have it fixed, but before she got around to come down she got accustomed to wearing the plate without the spring, and I believe at the present time she is wearing the plate without the spring; it served the purpose at any rate to enable her to learn to use them.

I do not think there is any more to say in regard to this case. I have photographs of the case here taken before and after treatment. The negatives from which these have been made have not been retouched and any defect is clearly shown; it will show you just what the defect was. You know in photographs any little defect is often magnified, but even where it might be seen in a case of this kind as the line of demarkation between the nose and the face on the photograph shows as distinctly as the actual case does. Upon side view this line of demarkation is scarcely noticeable.

DENTISTS AS PRESCRIPTION WRITERS.*

By R. E. Nixon, D. D. S., Duluth, Minn.

Do our colleges instruct sufficiently in the art of prescription-writing? How many graduates are capable of correctly writing a compound prescription from the heading to the signature?

Gentlemen, I assure you the percentage is very small. Yet the ability to do so should be considered by our colleges as one of the essentials of a dental education.

Our colleges do not instruct sufficiently on prescription-writing —the students probably receive a vague idea of how to write a prescription, but that is all. The average dentist seems to have but a very slight knowledge of the terminology of the ingredients in his prescription, and therefore resorts to abbreviations. The majority of dentists use abbreviations in the body of their prescriptions. But it is not only in the terminology of the ingredients, but in many cases it is decidedly wrong and open to criticism in other respects.

However, I feel safe in saying that dentists are writing more prescriptions as their profession advances—some for internal use as well as for local use, and are more or less complicated. Dentists argue that they have a perfect right to prescribe internally the same as their medical brethren, providing that they consider such treatment essential for the alleviation of pathological conditions in their branch of science.

Therefore they should understand how to intelligently write a prescription and also the physical and chemical actions of the drugs they prescribe.

Some physicians are not capable of writing a prescription properly, but as a whole the physician is far ahead of the dentist, which by all means should not be the case. The terminology of the ingredients of a prescription may seem like a small thing to some—they may say that it does not matter whether it is written grammatically or not—so long as the druggist is able to make it out and put up what the dentists intended.

This is a grand mistake. Dentists should be able to write the Latin title of a drug or preparation of the Pharmacopeia as well as the Latin names that occur in the study of anatomy and physiology. The failure to do so in either case shows a deficiency in one's education. A prescription written in a careless way may be a detriment to the author in more than one way.

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*Read before the Minnesota State Dental Society.

Gentlemen, it is very often the case that a person will go into a drug store and inquire for a good dentist. The druggist not being acquainted with any of the dentists naturally will refer the would-be patient to the dentist who is capable and painstaking enough to write an elegant and proper prescription. And of course the druggist naturally supposes that if the dentist which he refers the would-be patient to is capable of writing a proper prescription, he must certainly be capable and painstaking in other branches of his profession. Again, a physician may be called to see a patient who is already taking medicine prescribed by a dentist for some dental trouble. He naturally wants to know what the drug is so that he is able to prescribe intelligently, knowing that what he prescribes will not be counteracted or augmented by what the patient is already taking. He asks for the prescription and if the patient has not got it he takes the number and goes to the drug store and reads the prescription. Thus the prescription is criticised by another educated man. If he finds an abbreviated prescription and the terminology of the ingredients wrong he will form his opinion as to the ability of the dentist who wrote the prescription.

Gentlemen, an abbreviated prescription may be the cause of a mistake in the compounding, which in turn may be fatal to the patient. This is why a dentist or any other prescription writer should write his prescription out in full.

Gentlemen, it is well to take into consideration:

First. The patient's welfare.

Second. Your own reputation.

Third. The druggist's reputation.

Dentists as a rule seem to think that one must have a thorough knowledge of Latin in order to write a proper prescription, but this is not so. Of course, one must be familiar with the Latin titles and orthography of drugs and their preparations as they appear in the Materia Medicas and United States Pharmacopeia, and I think the majority of dental graduates are. If not, they should be, if they have any love for their profession. Of course it is a well-known fact that in all professions and other lines of business, there are a few *"black sheep,"* as we would call them, who have no ambition for a further advancement in their line of business. But, gentlemen, that is no reason why you and I should not advance. There are certain abbreviations allowable in prescription writing, as M. for Misc—Mix; Sig. for Signa—Write; Chart. for Chartula—a paper, just the same as abbreviations allowable in letter writing. But the body of the prescriptions should not be abbreviated, and when it is it shows one of two things—*carelessness* or *ignorance.*

Abbreviations are in general use in prescription-writing, but should be avoided as much as possible. First, because their lavish use is a sign of the prescriber's ignorance of Latin terminology of drugs; second, they confound the compounder; third, they enhance the chances for error; fourth, they are a source of danger to the patient.

The following table will give a few examples of the dangers of carelessness in the employment of abbreviations:

Aconit. may be either Aconitum or Aconitina.

Ammon.—Ammonia or Ammoniacum.

Ac. hydroc.—Acid Hydrochloric or Acid Hydrocyanicum.

Chlor.—Chlorum, Chloral or Chloroform.

Hyd. Chlor.—Hydrate of Chloral or Hydrargyri Chloridum.

Sulph.—Sulphur, Sulphas, Sulphidium or Sulphitum.

Zinc phos.—Zinc Phosphas or Zinc Phosphidum.

From the above mentioned table, gentlemen, you can readily see the great necessity of avoiding abbreviations in your prescriptions. Ink is always preferable to lead in writing prescriptions. Remember that the United States Pharmacopeia is revised every ten years and as soon as the new one comes the old one becomes like a last year's directory. It may be right—and it may be wrong.

A correct prescription should begin:

First part—Is the superscription, which is the sign ℞, an abbreviation for recipe, meaning "take" of.

Second part—Is the inscription, consisting of the names of the drugs.

Third part—Is the subscription, meaning the directions to the dispenser.

Fourth part—Is the signature, directions to the patient.

Fifth part—Is the physician's name on bottom of right side. Patient's name on bottom of left side and under it the date.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, February 5, 1901, with Dr. George B. Perry in the chair.

Dr. George W. Cook read a paper entitled "Actinomycosis," which was illustrated with lantern slides.

Dr G. V. Black was called upon to open the discussion. He said: I hardly know how to undertake a discussion of this paper, and I will not attempt to follow it through all its windings. I became acquainted with the actinomyces pretty early in its history, having met with it perhaps twenty years ago. At that time there was something of a scare as to this particular fungus. There had been a number of deaths from infection by this fungus in the old country, and it was then becoming known in this country. Some herds of cattle were infected with this fungus, and something of a scare among cattlemen took place. Perhaps it would be news to some of you if I were to say that the little town of Jacksonville, thirty years ago, shipped more cattle to the East than all the rest of the West put together, including Chicago. The cattle interests throughout that region were so great that an infected herd coming through those lines of travel created a great scare, particularly when it was supposed that the disease was a very fatal one. But we very soon learned it was not a very fatal malady; that it was not a very dangerous disease among the stock or among men. I happened to have three cases of alveolar abscess infected with actinomyces, and in two of them I had the opportunity of observing the course of the disease, and the conclusions arrived at then were that actinomyces, if operating in conjunction with the ordinary staphylococci, or pus micro-organisms, was not to any considerable degree a dangerous disease, unless vital organs happened to be infected with it, for the inflammatory area produced by the actinomyces would be removed by the suppurative staphylococci and the case would get well. We understand that it is the habit of this particular staphylococcus to search out all inflamed areas and cause them to break down by suppuration, extending a peculiar inflammation of its own in the meantime, and in this way the inflamed area caused by these fungi would be removed. I am sure that the cases that came under my care had no other treatment than the vigorous use of antiseptics, and as other cases occurred we learned that infection about the jaws in the human subject was not very serious. We did not in those cases use iodide of potassium to bring about a cure. In saying this, I do not wish to be understood that there is no danger from actinomycosis. Not by any means, for when it involves vital regions it may become very dangerous and particularly is it liable to be long drawn out in its course. We have observed cattle going about for months with big bunches upon their jaws caused by the actinomyces.

As to the source of infection, it is supposed that the germ grows as a saprophyte, and is indigenous to certain regions, though not very generally to be found. It is supposed that it is taken in with the food, and from the breaking of the mucous membrane with sharp straws, etc., cattle become infected about the jaws by the punching-in process, if I may so term it, with the sharp ends of straws or of stiff grasses. In some regions we have considerable silica in the grass blades, or the grass blades may have sharp edges; particularly in regions where there is much sand there is a tendency to the formation of silicates, so that the grass blades in such regions are more liable to cause this particular kind of infection about the jaws of stock. The infection is of such a nature that it is not so liable to occur in alluvial regions where the grasses are softer and there is less of the silicates.

The historical features of this subject have been sufficiently brought out. I have not seen a case of actinomycosis for a good many years, and yet if the peculiar granules were in the pus from an abscess they would be apt to catch my eye. I have not looked particularly for these granules, simply because I have not been especially interested in this subject. I should not from my experience expect serious results from actinomycosis, yet I would not treat the matter lightly, because we may have infection in important regions of the body and great damage might be done. It is well to rid the patient of such an organism as quickly as possible.

I do not need to say anything of the history of this class of growths. It is very nearly akin to some of the forms of mold. There are an immense number of species of these forms. Many of them are parasitic upon plants, and it is not at all impossible that if the history of actinomyces was run down to its limit, we would find it parasitic in some particular plants. This, I believe, is not definitely known.

When this subject came before us first, and I was expected to speak upon it in opening the discussion, I took some pains to look up the subject, but unfortunately the matter passed out of my mind, and to-day I looked for my notes and failed to find them. But this I noted particularly, that while the text-books of twenty years ago rarely left actinomycosis out of consideration, only a few of those published recently make any mention of it. Even Sternberg in his immense work, does not mention it. It seems to be dropping out of the literature. Perhaps too many have looked upon the disease as I looked upon it at the time I became acquainted with it.

The polymorphism of micro-organisms is well known. There are certain species, not very many of them, that undergo certain transformations during their life processes. The leptothrix of Vignal grows in the human mouth. It first grows into long threads, then breaks up into bacilli, and these bacilli break up into shorter bacilli, and form spores. Then the bacilli go to pieces and we have only round forms that will not stain well. We must cultivate this in bouillon. It will not grow upon agar-agar or gelatin. The ray fungus is one of the polymorphic species. There are many molds that have polymorphic features. At one time, as a means of recreation, I tried to see how many species of mold I could find in the dust in my office, and I found it a very interesting piece of work. I isolated and grew twenty-five species within a short time, and some of these species gave rise to three different kinds of spores, distinct in shape, showing marked differences from one another, and we might produce the same mold from either variety.

Dr. Fred B. Noyes: A few weeks ago a physician brought a case into my office for consultation, and as it was thought to be actinomycosis complicating alveolar abscess I had an opportunity to read up a little on the subject. Aside from this case, which is a doubtful one, I have never seen the disease. In this case the pus was examined by some one else; I did not get any of it, and they failed to find the ray fungus. I would like to ask Dr. Cook and Dr. Black if in the cases of actinomycosis which they have seen complicating alveolar abscess, there was a tendency to inflammation and enlargement of the lymphatic glands of the neck. In the case that I have referred to, whether it was infected with actinomyces or not, the trouble originated from an abscess in the inferior third molar on the right side, and at the time I saw it I judged it was not actinomycosis infection, because the lymphatic glands in the neck were very much affected, and the only literature at my command said these glands were usually not affected; but the physician said that the millet-seed appearance of the pus had been marked in the earlier treatment of the case.

Dr. G. V. Black: I have not observed that the lymphatic glands are especially liable to enlargement in the cases that I have seen. Certainly, we have enlargement of the lymphatic glands accompanying a suppurative process in many instances, and in the absence of actinomycosis I should not regard it as a symptom of that disease from my memory of the cases I have seen.

Dr. George W. Cook: I am inclined to agree with Dr. Black that I should not consider a case one of actinomycosis unless I found the granules. As to enlargement of the lymphatic glands of the neck, it is an exception rather than the rule that this occurs. These glands are seldom enlarged, so far as I have been able to determine from the literature of the subject. Some three or four years ago I chased after and investigated every case I heard of; I looked up their history as well as I could. Dr. Fenger, of this city, has had a number of cases of actinomycosis which he will doubtless report in course of time. I have seen seven cases of the disease, and have had a chance to see the slides, showing the ray fungus. Out of the seven cases, in five the infection evidently took place in the alveolar process. In neither of the cases were there enlarged lymphatic glands of the neck. I am inclined to believe that where enlargement of the lymphatic glands occurs in connection with actinomycosis, secondary infection with tuberculosis has taken place.

Dr. J. E. Hinkins: Last summer, while I was engaged in the work of experimenting with cements in connection with the different pus forming bacteria and micrococci, different preparations were used, and among them Witte's peptone, with glucose, asparagin mixed with glucose or lactose and Norsdoff Heyden, with glucose or lactose, and with the addition of 1 per cent to each media sulphate of soda, phosphate of soda, and chloride of soda. Dr. Cook spoke of one bacterium which he called the leptothrix buccalis. I obtained almost pure cultures from the cervical margin of a tooth. The cavity had been filled with cement, the patient being seventy years old. I procured pure cultures from Professor Jordan, of the Chicago University, of the common pus forming bacteria of the mouth, and I made a number of inoculations which I obtained from patients in my office who had an excessive acid secretion of the mouth and grew these cultures while growing the others. We had to titrate every day to obtain the amount of acid produced from day to day, and this one form of bacterium to which Dr. Cook has referred, strange to say, had produced a larger amount of organic acid than any of the others, although we had the staphylococcus and the acidi lactis bacterium. In short, we had all the common pus forming bacteria. But that particular one referred to produced a greater per cent of acid than any other bacterium with which we experimented. Whether it is the bacterium of pyorrhea alveolaris or leptothrix buccalis I am unable to say. Without a doubt it is a great acid producer.

DR. C. J. DRUECK: There are one or two points I desire to speak of in connection with actinomycosis. Dr. Black referred to ray fungus as a class of molds. I would suggest that we go a little further and compare them to the tapeworms. The tapeworm as we find it in man is not infective to man again but has to go through another phase of its existence, which is usually the dog.

Crookshank removed diseased tissue from a man and implanted it in the abdomen of a calf and the calf became infected. But Salmon of the Bureau of Animal Industry has repeatedly tried to infect a healthy calf from a diseased calf and has failed. We find actinomycosis often on some forms of corn and especially on pearls of barley. That is how the Bureau of Animal Industry gets some of its forms. This favors the theory of an existence similar to tapeworm with a life stage in the grain.

A word regarding the pathology. The germ is most frequently found in the follicular crypts of the tonsil and in the teeth. Dr. Cook has found it in the molar teeth. The disease is found in the mouth, jaw and throat where, as Dr. Black has explained, the grain infects it. The disease is very chronic and locally malignant. It is almost wholly limited to the mouth. Metastasis is not common and it does not travel by the lymphatics. When it spreads to the lungs it is by aspiration or to the stomach by swallowing. We never find it in distant parts of the body.

In animals we see the formation of a large tumor mass, and among the early names given to it were bone canker, osteosarcoma and bone tubercle. The fungus sets up a new inflammation in its neighborhood resembling a tuberculous focus. In man the growths degenerate early and do not reach any size as tumors. This is probably another stage in the life history of the actinomycosis and a form which breaks down and is easily removed.

Dr. A. W. Harlan: I would like to say that the first case of actinomycosis hominis that occurred in Chicago was somewhere about 1882 or 1883, in the care of Drs. Belfield and Murphy, and at that time I was very much interested in the subject. I took the same amount of trouble then that my friend Dr. Cook has taken later to look up the subject. I found that the researches of Volantini, an Italian, had been made about eight months prior to that time, and they showed that the mold came more particularly from barley than from any other cereal or any other form of animal food, as referred to by Dr. Drueck, and I thought I was perhaps the only one who would make that statement this evening. Those of you who care to look up the subject can find references to it in McFarland's Pathogenic Bacteria. You will likewise find reference to it in an extensive work on various micro-organisms written by Bowhill. But Belfield's case of lumpy jaw was a man who was an attendant at the Stock Yards. There was considerable discussion in the *Medical Record*, of New York, and other medical journals at that time, and it was doubted whether this was really a case of actinomycosis hominis. But it seems that there are a few cases, but not very many, and that the human population need not be seriously concerned, because man is not going to eat raw barley with whiskers on it, and if the spores and whiskers are not there he will not find the mold.

In beef cattle that eat barley heads and barley stalks, etc., we can readily see how infection can occur, and later perhaps there may be the accidental invasion of other organs of the body.

I had the case of a butcher in 1885 who had lumpy jaw. The man was reduced in weight from 190 to 130 pounds in consequence of the severity of his infection. As Dr. Black and Dr. Cook have said, there was no particular enlargement of the lymphatic glands of the neck in that case. The man is still living in Chicago, and strange to say he has never become any heavier.

The disappearance of the consideration of this disease from modern works I can quite easily understand, and that is, that the danger of this infection to man is growing less and less. The total number of cases in twenty years does not exceed 531, or something like that, in the whole civilized world. This shows that there is not much danger from this particular form of mold.

I did not rise particularly to contribute anything to the discussion more than to say that I am interested in the subject as brought before this Society. The paper has shown considerable research and patient labor on the part of the author, and personally I wish to thank Dr. Cook for his work in this direction, because I know what it means to look up hundreds and hundreds of references, and one may consult a half dozen or dozen large volumes and find nothing; still, he has to go on until he can collect material upon which to base his hypothesis or his facts, and that is the particular thing I wish to speak of in connection with the excellent work that Dr. Cook has done in this direction.

Dr. Cook (closing the discussion): The cases of actinomycosis on record apparently are very few as compared with those that are not reported. There are a number of physicians in Chicago who have had cases of this disease, and I believe Dr. Drueck has had two or three such cases himself which he has never put on record. This pathological condition is not one of grave importance, so far as the health or life of the individual is concerned, still many deaths have occurred from this disease. While I was in London this summer I had the privilege of seeing the post-mortem on a case that was to all appearances tuberculosis. Apparently there were no evidences of actinomycosis. The case differed from the ordinary cases, inasmuch as there was a consolidation of the lung tissue rather than suppuration. Apparently there had been no suppuration. The ray fungus was found embedded in the alveoli of the lung.

The cases reported by Dr. Sawyer, of Iowa, all of which were apparently of a grave nature, are extremely interesting, more so to the physician than to the dentist. The disease had extended back into the mastoid cells. A sinus had formed, extending back to the mastoid cells, which was opened and drained; the patient put on iodide of potassium, recovery taking place.

As to the history of operations for this disease in this country, I believe Dr. J. B. Murphy was the first man in America to operate on a case of actinomycosis, which was reported in 1882 in a local medical journal. I forgot to mention this case in my paper. The case was diagnosed as one of true actinomycosis.

The likeness of the disease to other forms of fungi is somewhat apparent. In the *International Dental Journal* for August (I cannot recall the name of the author) there is reported a number of alveolar abscesses in which the author found in his examinations that 10 per cent or more of them contained the ray fungus or the antinomyces. The pus producing micro-organisms seem to interfere very much with the growth of the ray fungus in artificial culture media. They soon become attenuated and die. They are grown with difficulty in artificial culture media and it is not an easy matter to get pure cultures of ray fungi. But when once gotten, they will last for years if laid away.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held in the Trude Building, February 18, 1901, with the President, Dr. L. S. Tenney, in the chair.

Dr. G. E. Hawkins read a paper entitled "Matrices for Approximal Gold Fillings."

The discussion was opened by Dr. Oscar L. Spitz. Dr. Spitz said: The cardinal points we must consider in regard to the matrix are, proper material and perfect adaptation. Operators generally have a certain pattern and material which they prefer, steel or German silver having first choice. The material must be springy enough to allow the gold to be forced over the margins by pressure of the plugger, and yet stiff enough to prevent the plugger bending it out of shape. Proper adaptation is important. We must use care not to injure the gum by forcing the matrix down too far. It should rest lightly along the margins of the cavity, being held in place by a roll of cotton, gutta-percha, and orange wood stick, or a piece of separating rubber. Some operators object to the use of the matrix, claiming that it obstructs the view of the cavity, prevents proper contour, and requires more time to trim and polish. If the gold is packed and malleted properly, we should have as perfect a surface against the matrix as we have against the walls of the teeth and requiring very little trimming and polishing. A matrix will very seldom interfere with our view of the cavity, if properly shaped and adapted, except in a few mesial approximal cavities where there is wide separation, when its use is generally not advisable.

We must guard against bridging at cervical margins and imperfect margins. There is a great saving of time and work in using a properly adjusted matrix, especially when using the soft golds, as White's Moss Fiber or Sibley Felt Gold. By starting the filling with Moss Fiber, slightly annealed, and using rather small pieces, there is little danger of bridging at the cervical margin or of having the gold ball up and the filling rock.

Dr. J. N. Crouse: I have almost abandoned the use of matrices in gold filling, because we have more failures from them than from any other step in the operation. Furthermore, we cannot use gold in large enough masses but that in condensing it we endanger the margins of cavity. Such failures are usually not observed, and operators attribute them to something else, or else say that the fillings fail becaused the walls break away. When necessary to use a matrix I fasten it as follows: Take quick-setting oxyphosphate of zinc and place it around the soft copper strip which has been adapted to the cavity. Then in five minutes you can mallet against it from any direction without danger of loosening it.

In speaking of gold fillings, I wish to mention a system which has almost gone out of use, yet it is the quickest, surest and easiest one I know. In large approximal cavities, difficult of access, I fill three-fourths of them with noncohesive cylinders, making the latter myself. Take No. 3 noncohesive foil and fold in ribbons to make the proper sized cylinders. Where several are used I hold the end of strip over a lamp so that the last fold may be cohesive, giving me a chance to use cohesive gold afterward, and then I use No. 10 rolled gold. I fold a sheet of No. 10 twice, so as to get four thicknesses. At one time good operators all over the country used heavy gold, nothing less than No. 60, but this required retaining pits, which were objectionable. I filled a large molar this morning with approximal cavities on both sides, running over the top. It was a rather inaccessible tooth, and I used nearly a book of foil, yet filled it in two hours, and will finish it up to-morrow. I feel sure that on expansion of the gold there will be no breaking of the walls nor any defect in the margins. This method is probably not taught nowadays to the young men in our colleges, but it is a very old plan and was used before the advent of rubber dam. Then the work had to be done quickly because the saliva could not be kept back. Years ago I have seen skillful operators put in excellent fillings in ten minutes, filling the entire cavity with noncohesive cylinders. By this scheme one can finish the filling quickly, but in using a matrix the gold must be put in in small quantities, and must be condensed close to the cervical margin.

Dr. C. N. Johnson: I knew that if Dr. Crouse got up to discuss this subject, that I would have something to say. The subject of the matrix is an old one, and I feel some degree of diffidence in saying anything about it, because most of those present are familiar with my ideas regarding matrices. This matter was threshed out vigorously some years ago, and I do not know that there is anything new particularly about it. Some points have been mentioned to-night that are worthy of note and of brief consideration.

Dr. Crouse referred to the chipping of the margins by the use of the matrix. I cannot see why we are more liable to check the enamel margins by the use of a matrix than we are without it. If the margins are prepared properly in the first place, they will stand a reasonable degree of impact by the plugger, provided the gold is kept between the plugger point and margin without danger of chipping, and I do not see why the use of a matrix will lead to chipping of the enamel margins, if it is used properly.

The method of holding the matrix in place is a very important point connected with its use, and it is here that I wish to take issue with Dr. Crouse in regard to the method he has employed. After the method he has advocated so forcibly to-night, I am not surprised that he has abandoned the matrix, because I do not believe that with the method he has described the matrix can be used serviceably in the mouth in the difficult places in which we are called upon to use it. Backing the matrix against the margin of the cavity by a material so unyielding as oxyphosphate of zinc defeats the very object we want to gain when we use the matrix. To use the matrix successfully it must be possible to force it away from the margins at will with the plugger point. This is a cardinal point necessary with any matrix: If we are going to protect the margins perfectly, we must be able to press the matrix away from the margins, so that we can readily carry the gold between margin and matrix. If we do not do that, we do faulty work with the matrix. I make this rule when I apply the matrix to a cavity. If I cannot at will force the matrix away from the margin, I abandon its use and do without it. I believe gold can be packed into sharp angles, but in building up fillings, sometimes rapidly, I do not feel secure in attempting to build up a filling like that and covering the margins perfectly with the matrix unless it will yield under pressure. That is one point where I take issue with Dr. Crouse in regard to the use of the material in the interproximal space to hold the matrix in contact with the margins of the cavity. There are some cavities and teeth of such form that no matrix I have seen can be adjusted without some material to hold the matrix up in position at the gingival third of the cavity. Let us take a so-called bell-crown tooth, if we place a matrix on that, the matrix will stand out at the gingival margin, leaving an appreciable space between the matrix and margin. We require something to hold the matrix in position, and I do not think for this purpose we want anything so rigid as oxyphosphate of zinc. I have used gutta percha instead of oxyphosphate of zinc for this purpose. It is sufficiently rigid to hold the matrix in position against the impact of the plugger and sufficiently yielding, so that by applying force upon it with the shank of the plugger, it can be forced away from the margin of the cavity at will. If there is any one point where we cannot force the matrix away from the margin, I conclude that there is something wrong in the adjustment of the matrix. After we start the filling and the gingival margin is covered the matrix should be held slightly away from the buccal and lingual margins of the cavity, so that we can cover them as perfectly as we can if there is no matrix there at all. The matrix serves as a supporting wall against which to build the gold. One of the best things I know of in connection with the matrix is that with it we are able to get denser contact points than without it unless we have a larger space than is necessary.

So far as marginal condensation is concerned, a point which Dr. Crouse has brought out before, it is important in hermetically sealing cavities, and this object can be attained very well by the method mentioned by Dr. Crouse. But the same thing can be done with the matrix, without building such a large excess of gold to be subsequently trimmed away. After the matrix is formed of the proper contour and the filling is inserted, it is a matter of a few minutes only to dress the filling at the margins, because we have given it the form we want with possibly a slight excess over the margins to insure the sealing of these margins.

Dr. R. B. Tuller: I wish to mention one thing in connection with the matrix, which I have used many times very advantageously, and I believe others have used it successfully, and that is to fold over the matrix, before placing it in position, several layers of non-cohesive gold, so that it covers and extends beyond cavity margins. It is necessary to have sufficient space to permit sliding it up between the teeth and then, when in position, it is wedged tightly against the cavity. Then we insert an instrument between the gold and matrix about the center, and force the gold carefully back into the cavity, covering floor and walls as far as it may go, which is continuous, you see, over and beyond all margins, leaving quite a quantity of gold between the matrix and margins, which is held there firmly in place. You can then proceed in any way that you desire in filling the cavity with noncohesive or cohesive gold, and you are sure, with ordinary care in introducing and packing the rest of your gold, that all margins are safely covered.

Recognizing the value of tin as a covering at margins, especially at cervical, I frequently use several folds of tinfoil over the matrix, or tin and gold folded together, instead of gold alone, and I find it an easy and expeditious way of making a tin-lined cavity, so to speak.

Dr. Edmund Noyes: The use of the matrix in making gold fillings requires the minutest care and attention on the part of the man who uses it. In my judgment it should be limited strictly to the places where the alternative of using a matrix would be the use of the back-action plugger. In other words, wherever you can get direct force with the ordinary plugger toward the interior and toward the walls of the cavities against which you wish the gold to be placed, wherever you can readily use your mallet in such a way that the gold will be forced directly against the walls and margins where you want it, there is little or no object in using the matrix. But there are places where the matrix can be made a support, by means of which you can wedge gold between the matrix and the walls of the tooth. It can be made a great convenience, but very great care is required in order to get gold over the margins. That part of the operation has been very well described. At the buccal and lingual borders of the fillings if they are large ones, as they usually are when we want a matrix, there is a very sharp and very acute angle between the outer portion of the cavity and the matrix, and the matrix must yield a little so as to allow the plugger to come in between the matrix and the margin to make a perfect piece of work along those lines, and it must yield only a little, because if it continues to yield or stretch, too much gold will be placed over the borders and the adaptation there may be imperfect because you do not get the support of the matrix that is necessary. That is to say, the narrow space between the matrix and the border must be wedged tight with gold and the matrix must be unyielding enough to resist the force of wedging, so that the force which drives the gold will pack it with sufficient compactness and accuracy against the matrix on one side and the extreme border of the cavity on the other side. I think this can be done with noncohesive gold, which may be forced into a very acute angle and over the border, but it is almost impossible to do so without having the gold in such shape that after it is finished it will leave more or less imperfect margins. It is very difficult to make a perfect margin to a filling with noncohesive gold unless it is used in the form of cylinders, so that the smooth layers of gold side by side and parallel are all of them far enough into the interior of the filling, so that fragments do not peel off in the finishing or afterward in the use of the filling. It is a difficult matter to make the margins of a noncohesive gold filling as perfect in smoothness, polish and accuracy as can so easily be done with cohesive gold, so that in my own practice and judgment the use of noncohesive gold under these circumstances is limited. I am in the habit of laying a considerable thickness of gold over the borders. The noncohesive gold cylinders are placed in, before applying the matrix, then it is carried down over the borders, so that the gold is secured between the matrix and borders, and in that way the cervical border can be made secure. But it is desirable in this work to use pluggers that are not too large and which have a beveled point that will reach into the acute angles. I have made comparatively few fillings with the matrix. I have made some that have given me excellent satisfaction; I have made others that I thought were good when I was making them, but after they were done I have found spaces along the borders that I had to repair after the matrix was removed.

Dr. A. B. Allen: If I understood Dr. Noyes correctly, there is one point in connection with the use of the matrix mentioned by him that I do not understand, and that is to build against the matrix and thereby force the gold into the cavity sufficient to make a good filling. There is no question but what the matrix, if properly used, saves much trouble, and as Dr. Johnson has said, it yields at will where we want to apply gold a little beyond the margins of the cavity, and therefore sometimes it will draw close in one place, and if it is a little bit yielding you can force the matrix away so as to get an excess of gold at margin, and in that way have it completely adapted and in finishing there is no question but what it saves us lots of trouble.

Dr. J. E. Hinkins: I wish to mention one point which I expected Dr. Johnson or Dr. Crouse would bring out. Dr. Gordon White has a little matrix on the market which he has made, and from which I have obtained more satisfaction than any matrix I have ever used. I was taught to fill teeth as Dr. Crouse recommends, with soft foil and large pellets, but after the matrix came out, I took to it more favorably than I did the other method. I do not know where I got the idea, but since I have used flat pluggers, oval pointed and serrated all around, I have been able to follow the bucco-lingual margins without any trouble in chipping of the cavity. Before the use of these pluggers I used to have them chip all the time. I have several sizes, and it is very seldom now that I chip a margin.

Dr. G. Walter Dittmar: I want to say just a few words regarding the use of the matrix for gold fillings. I have not used it to any great extent for this purpose because I believe there are but few places where its use is justified, being limited almost wholly, it seems to me, to distal cavities in molars.

However, I have had considerable experience in adjusting matrices for amalgam fillings, and I find frequently that even with a plastic, like amalgam, that students fail to work it up to the margins of the cavity properly, especially if it be a so-called quick-setting amalgam.

I therefore believe the percentage of failures in gold fillings would be decidedly increased by the indiscriminate use of the matrix, simply because of the failure to pack and condense the gold well at the margins.

The method I generally use in adjusting matrices is different from the ones that have been described. However, I did not hear all of the paper. I generally use either German silver or copper, properly contoured, place it between the teeth, and ligate it there, using silk ligature. Perhaps this is a method that most of you use, it being one that Dr. Black advocates, and is better than any other I have tried. You cut the matrix properly, contour and adjust it properly, then ligate it to place thoroughly. The ligature will allow some movement from one side to the other, if necessary. At the gingival border insert a pine wedge, driving in this wedge from the lingual. This will give just a little, but will prevent the matrix from crowding away too much from the gingival margin of the cavity. I will say for the benefit of Dr. Crouse that we still teach the use of noncohesive gold in colleges.

Dr. Edmund Noyes: My previous remarks were evidently misunderstood by Dr. Allen. I did not mean to convey the idea that in those cavities in which we use a matrix we may not also employ a back-action plugger. It may be used to pack against walls or corners otherwise inaccessible, whether using a matrix or not. It is for the outside portions and over the borders that the matrix obviates the necessity for the back-action plugger, though it may sometimes be used a little after the matrix is removed.

Dr. Hawkins (closing the discussion): There is no doubt in my mind but that Dr. Crouse's method of filling approximal cavities of molars and bicuspids is an ideal one, but I regret to say that I cannot use that method. I was not taught it, and as I was unable to use this method successfully, I adopted the matrix. I have read the articles of Dr. McMillan in the *Items of Interest* repeatedly, and yet I have not been able to put in work such as I would like to by that method. I therefore took up the matrix. For a long time I put in approximal fillings without the matrix, but the work was so tedious that I made up my mind I would either begin using the matrix or quit putting in gold fillings in distal approximal cavities. It took too long to polish the filling, and it was out of the question for me to stand up under it. I failed to see the force of Dr. Crouse's criticism in the chipping of the cervical margin. That was one reason why I took up the matrix. I can cover margins with soft gold or with tin and gold and be more certain of not chipping the margin than I am when I do not use the matrix.

Dr. C. N. Johnson read a paper on "Management of Local Dental Societies."

DISCUSSION

Dr. F. E. Roach: This paper is entirely too good to pass without some remarks. Personally, I want to express my hearty thanks to Dr. Johnson for having read this admirable paper. I am sorry that it was not read long ago, as I feel we have lost a great deal by not having heard it before. I wish such a paper could be read before this Society once a year. It would do us all good.

Dr. Oldfield, of New South Wales, was asked to participate in the discussion. He said: Mr. President:—I did not expect to say anything on this excellent paper. I have been delighted with it. Unfortunately for us, we have not had any dental society until within the last two years, and we are going through the experience which all dental societies have in their youth, and it takes time to build them up. I am sure it would do us good if we could have a paper from Dr. Johnson occasionally. There is no doubt but what the influence of dental societies is most beneficial professionally and socially, and it does us good to be connected with them. I have had the good fortune to have attended previous meetings of this Society, and I always go away refreshed and very much benefited. I thank you.

Dr. Edmund Noyes: There is one aspect in connection with the subject of Dr. Johnson's paper that it seems to me worth while to say a few words about. The paper referred particularly to the value of local dental societies in smaller towns where only a few practitioners are found, and to the value to the profession and to the communities if all the men who are reputable and honorable will get together and become acquainted in local society work. Most of you have had the opportunity of observing the great value of such societies in several of the smaller cities of the State. It occurs to me, that most of the practical difficulties, jealousies and misunderstandings occur betweeen dentists who live in the same neighborhood, and I believe that it would be exceedingly valuable if in every considerable neighborhood of this city and its suburbs the men, who are neighbors of each other, would get together and form professional societies, having from a dozen to fifty members, according to circumstances, but including those who are practicing within a few blocks of one another. It seems to me that a good many advantages and useful objects would be attained by so doing. Some of us who have been in the city dental societies for twenty-five or thirty years remember the time when there were not more than from a dozen to twenty-five ordinarily present at the monthly meetings, and everybody was expected to participate in the meetings and to become more closely personally acquainted with one another than it is possible for a hundred and fifty or two hundred men to be, meeting together in a large society, because there is not time enough to bring so many individually into contact. The special value of close acquaintanceship can be accomplished in smaller societies, and it is eminently practicable that it should be done by localities. In speaking of the social advantages, I do not wish to be understood as minimizing or ignoring the professional value of such small gatherings. The small societies can be made of the greatest service professionally to the men who attend them.

Dr. J. N. Crouse: I am, perhaps, the oldest society member here to-night, and can say that the various societies with which I have been and am connected have done me a great deal of good. If the advice given by Dr. Johnson can be followed out by capable men it will be of great value. Quite as important as a large membership is to put the right men in office, for I have seen good societies almost ruined in a year by poor officers. The president, secretary and executive committee should be elected because of their fitness, and not because they are good fellows, or to repay some real or fancied obligation of the society. The dentists in one large city are no smarter than those in another, but the reason why a few city societies are known all over the country as very successful and valuable organizations is because they have good officers, who not only conduct the meetings properly, but plan and carry out the routine work. Dental societies in small places are good if rightly conducted. If not, they are harmful, as their lack of success prejudices the members against society work and makes it harder for the State and other organizations to get hold of them.

SEVENTEENTH ANNUAL MEETING OF THE MINNESOTA STATE DENTAL ASSOCIATION, HELD AT MINNEAPOLIS, SEPTEMBER 3, 4, 5, 1900.

Dr. C. H. Stearns read a paper entitled, "Kinetics of the Mallet." See page 321.

DISCUSSION.

Dr. C. H. Stearns: I was on the program last year to present a paper on this subject, but was unable to do so, and at present I am very glad of the fact, and I also feel very diffident to come before this society to present a paper on this subject, knowing that there are better men now studying along this line, but I did not know it until after I was announced on the program. However, I shall give you my ideas as well as I can and listen to the discussion and be ready to learn what I can from it.

The first thing I want to call your attention to is the perfect transmission of force. These balls you see here (indicating) are simply anti-friction balls, the same as you have in the bearings of your bicycle, such as are used in turntables and derricks. I call your attention to the perfect transmission of force when I strike a blow holding a ball in this manner. (Indicating.) In the discussion of the subject we will leave the instrument out altogether, but the effect is just the same as if the blow were delivered by the mallet directly upon the jaw.

Dr. C. W. Jones: When I first received this paper from Dr. Stearns and read it over I had little idea it was of any practical use to us, but the more I studied it the more I found it of value in our everyday practice. After getting this paper and studying it carefully I assure you it is a subject of the greatest importance. There is one point I want to mention about the law Dr. Stearns brought out in relation to measuring the foot power in a body moving horizontally. You mean lifting against gravity, don't you?

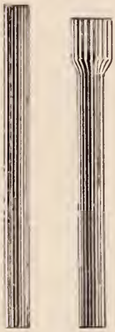


Fig 1

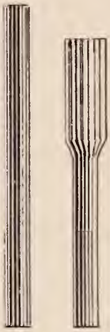


Fig 2

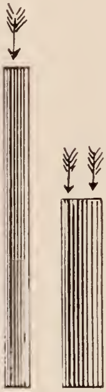


Fig 3

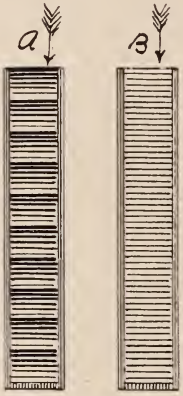


Fig 4

In studying Dr. Stearns' paper, I casually mentioned the subject to a friend of mine who is the chief engineer of one of our great railroad systems, and to whom I am indebted for a few practical illustrations of the use of force for impaction. In the construction of bridges, bridge builders use steel rods which have to be threaded at the ends, and in threading the end of a rod of equal diameter throughout it would make the cross section smaller. Therefore, to preserve an equal strength throughout the length of the rod, the end of the rod is enlarged and then threaded as in Fig. 1. For this purpose a light hammer, usually a pneumatic hammer, with high velocity is used on the end of the rod which thickens the end of the rod just far enough for the purpose intended. If a heavy hammer was used the thickening or enlarging of the rod would be carried proportionately a greater distance from the end of the rod as in Fig. 2. Again, if hydraulic pressure was used on the end of the rod it would be enlarged and shortened its entire length, providing it could be maintained rigidly without bending as in Fig. 3.

In driving piles the use of a light hammer with high velocity has the effect of battering down the head of the pile without driving it into the ground; while a heavy hammer with low velocity causes the pile to penetrate the ground with practically no battering of its head.

In some careful experiments made at Portsmouth Navy Yard, England, a man of medium strength, and striking with a maul weighing 18 pounds, the handle of which was 44 inches long, started a bolt one-eighth inch at each blow. It required a quiet pressure of 107 tons to press the bolt down the same quantity.

From these illustrations it is evident to me that we need at least three mallets of different weights for our use in impacting gold into a tooth, our own judgment telling us which weight is best for the purpose intended. If we are using large pellets of gold and wish the force to penetrate the entire mass of the filling, a heavy mallet or hand pressure would be the proper thing. If we are building up or contouring with ordinary sized pieces of gold, a medium weight mallet should be used. While for making an exceedingly dense surface a light weight mallet with high velocity is the best.

If, for instance, we were to condense gold in a steel tube, using large pellets of gold and a very light hammer, the result would be as shown in A, Fig. 4, each pellet being condensed more on the surface than at the bottom, while if a heavy mallet or hand pressure was used the result would be an even condensation throughout as in B, Fig. 4.

Dr. Black has invented an instrument by means of which he can measure the exact amount of force necessary for the impaction of gold. I was reading the discussions on this subject in THE DENTAL REVIEW and found the question was asked, whether a plugger with ten pounds hand pressure would have the same effect as ten pounds applied with high velocity of a mallet. Dr. Black thought there was no difference. I think the effect must be different as proven by the illustration of the man striking the bolt with a hammer weighing eighteen pounds. It is hardly probable that if the force which started the bolt one-eighth of an inch was measured it would equal 107 tons.

Dr. F. B. Noyes (Chicago): I have very little to say on kinetics of the mallet, but it is a subject about which I have thought a great deal within the past few weeks. Perhaps you know that Dr. Black has been working on this subject the last month or two, and from conversations with him I have some things to think about in connection with impact. The question of impact is a very weighty physical problem. The direct force of impact is a very difficult thing to measure. The measurement of impact in foot pounds is, as I think Dr. Stearns stated, of no use to us as dentists in measuring the force of the mallet. The statement made in connection with his paper in regard to obtaining the same force in foot pounds with different weight mallets was an entire eye-opener to me, but you do not get the same work. I was very much interested in the paper. Dr. Stearns kindly allowed me to read it before the meeting and I have had some conversation with him which has been exceedingly valuable and interesting to me. It seems to me the society should be very proud of this paper, and they should appreciate the physical experiments and the close thought upon physical subjects which it has involved. It meant a great deal of study, and the paper as it has been read gives in the clearest and most concise form the result of that experimental work. He has given us the matter in a nutshell, and I think the society has very great reason to be proud of having the matter presented to them at this meeting in the way it has been presented. I thank you.

Dr. T. E. Weeks: Granting that Dr. Stearns' experiments are correct, we may make this application of the principles. There are many operators who fill the gingival fifth, fourth or third of an axio-occlusal cavity with noncohesive gold. If Dr. Stearns' calculations are correct the indication is plain, where you use a large mass of noncohesive gold a heavy mallet should be used, while if you use cohesive gold where the necessity of impact is confined to the surface of the filling a light mallet should be used. Without mentioning any names I will just say that a certain gentleman, whom most of you know very well, has been in the habit of taking a half or a whole sheet of noncohesive gold and putting it in a large mesial or distal occlusal cavity and taking a mallet that weighed seven ounces and driving it into position, and you also know that there are very few cases of recurring decay where that method has been followed.

This is simply a crude empirical illustration of the method Dr. Stearns has given. We ought to try to take the practical out of everything that is given us. This is one of the subjects that is going to be presented in section No. 3 at Milwaukee next year.

DR. LAURENCE P. LEONARD: I wish to rise to offer a word of commendation in reference to this paper, especially on the basic principle of this paper, to wit: original research. I think, Mr. President, as dentists we do not devote enough time to original investigation, to original research and scientific investigation. We are too much inclined to perform our clinics as we do in practice with only personal equation to guide us instead of performing our clinics according to that which scientific investigations have proved. This latter in my opinion is what has advanced dentistry so remarkably in the last few years in America and also in Europe, especially in England. We are arriving at a basis which is solid, and we can only arrive at these bases through scientific investigation, and not through clinical experience alone. Clinical experience in itself is valuable, but in the actual scientific proofs gained by careful investigation and research you have something to depend upon; as I stated in my annual address last year, which some of you did not seem to grasp.

I think the State society is to be congratulated on the acquisition of this paper. The principle of force exerted by the mallet is something that has been discussed pro and con for some time, but very little has been done in putting forth something indisputable, which I think we have now. In my own practice, although I did not know the wisdom of it scientifically until to-day, I have been in the habit of using a heavy lead mallet in malleting down tin-gold—tin and gold rolled together. I found in clinical experience that the heavy mallet worked very nicely, but I did not realize until now that it was the proper mallet to use, scientifically, where it is desired to force the whole mass down to floor of cavity.

I am very glad to hear that this paper is going to be continued and brought before the National Dental Association. There has been a sort of a tacit understanding in the National Dental Association that no paper would be received that had been previously read or published. I think that is a mistake. The president or chairman of operative dentistry, I am not certain which, at Old Point Comfort, admitted before the National Dental Association that in his judgment he thought it would be wise to permit the re-reading of a paper before the National Dental Association. I am glad to hear that Dr. Weeks is going to bring this paper before the national association next year.

Dr. C. H. Stearns (Essayist): I must say that I am thoroughly disappointed. It makes me feel kind of bashful to receive all these bouquets. I expected a reception of quite a different character and I hardly know where I am at.

In closing the discussion I want to speak of one or two points. The first point I wish to speak of is in regard to the illustration brought out here by Dr. Jones. He brings forward a new kind of method of measuring force, one that I had never thought of before, and a remarkably good one; a method by which we can measure the penetration of lines of force very nicely, indeed, and get very clear results, making an ocular demonstration, and that is the point which he brings out in regard to those tubes filled with liquid. Taking a tube made of some simple material and filling it with some suitable substance, wax would be a very good thing, or some material of that nature to experiment with, placing on a plunger that would fit that tube, and striking it a measured blow, perhaps that would be better, and we would find after experimenting to get it adjusted just right, that we could show the penetration of lines of force in the bulging of that tube. It would make a very beautiful illustration. It would make a wonderfully fine exhibit and a good record. There is a great field for experiment. It would make such a beautiful, clear exposition of the subject I think I shall carry out some experiments of that kind some time myself. One of the gentlemen (I have forgotten which one) made reference to Dr. Black where he spoke about the impact of the blow and the force exerted by hand pressure in foot pounds, saying that the effect would be the same in ten foot pounds of pressure exerted by a blow of the mallet or the same amount produced by hand pressure. If my memory serves me right when he wrote that paper and answered that question, it was some time ago, Dr. Black said distinctly it was a subject he did not know much about at present, but I have since learned from men who are in close touch with Dr. Black that he has been working along these lines, that he had been making some instruments and that during the first half hour in which he experimented he changed his ideas very materially on this subject, and as near as I can make out the work that Dr. Black has done and the conclusions he has arrived at and mine are identically the same.

I am not familiar with Dr. Black's work, I do not know just what he has done in this work, but there is one thing I do know, knowing the acumen of Dr. Black, when he does go into a matter thoroughly he will bring out an exposition along the lines I have shown you. Another thing in regard to the point made by Dr. Weeks in the packing of large masses of soft gold. That is the time when a leather-faced lead mallet finds its usefulness. That is the only place I know of where it is the proper thing to use, but in those cases I think we are very apt to let it go way beyond what is necessary in penetration. One of my personal friends uses an eight-ounce lead mallet. We have had many a scrap over it. Now I say to him that I will take my half-ounce steel mallet (in my own practice I use a half-ounce steel mallet) and he may take his eight-ounce lead mallet and strike a blow upon the instrument, and I will take my half-ounce steel mallet and strike a very much lighter blow, lighter in the same proportion, and some fellow can take a seven and a half ounce sand bag and strike a blow and they will produce identically the same result.

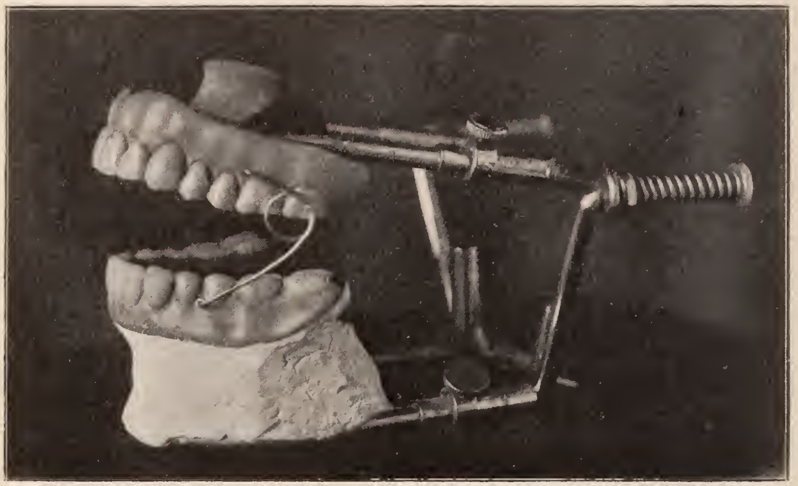
Dr. O. A. Weiss read a paper, entitled, "A Case of Nasal Prosthesis, with Perforation of the Palate. Also a Method of Retention of Artificial Dentures in Difficult Cases." See page 324.

DISCUSSION.

Dr. T. B. Hartzell: I was very much interested in this discussion. I heard this case mentioned, but never heard it explained very much and I am very much gratified to understand it. I wish to add a little something to what Dr. Weiss has said in regard to his method of holding up the plate. I have to thank Dr. Weiss for having brought that idea to my attention in a case of about the same kind. About a year ago a case was referred to me from the southern part of the State where the palate had been badly diseased. I curetted the palate and left a perforation and was afraid to place a plate held up in the ordinary manner on those tissues, and in searching for some method of holding the plate up Dr. Weiss very kindly showed me how to construct a plate and springs to hold the plate up in that manner, and I placed an aluminum plate in that palate and that has been in use about four months without any criticism or objection from the patient. The patient uses it very comfortably and uses it in masticating her food without any inconvenience. I made three sets of springs and allowed the patient to wear them three or four days each to see which would be the most comfortable. I gave them to her in a box so she would have something to keep that plate up.

Dr. H. M. Reid: I have seen the results of that case and I want to say to you as I said to Dr. Weiss, he can be proud of it. It was a beautiful result. I have seen many cases of that nature, but I have never seen a more beautiful case than that.

Dr. J. O. Wells: I want to say that I had the good fortune to see this patient after the operation had been completed and that the results in this case were wonderful. The operation was performed while I was a student at the college and we were privileged by the doctor to come to his office to see the completed case, and to prove what the results were I want to tell you a little incident that occurred. One of the young men of the class (I will not mention his name) was sitting in the doctor's reception room and there was a young lady in the room sitting at the window where the light came in strong and she could be seen very plainly. The doctor had



The light-colored projection on the upper surface of the upper plate represents the flexible rubber projection that fills the perforation in the plate.

Case of Nasal Prosthesis and a Method of Retention of Dentures in Difficult Cases.

not come in, but his assistant was there and this student after waiting quite awhile for the doctor finally told the assistant what his mission was, and wanted to know when the patient would be in so he might inspect the operation. He was informed that the young lady at the window was the patient upon whom the operation had been performed. I want to say further that I noticed this case very closely and it was absolutely impossible to tell that the patient wore an artificial nose within a distance of three or four feet. The results were wonderful and I had hoped to see the case present here.

Dr. O. A. Weiss (Demonstrator): I do not know that there is anything more to say on the subject except I might say a word or two more in regard to the springs. It is a case of "fit and try" in determining upon the spring that is best suited for the case. All that is required is a spring sufficiently strong to hold the plate in position. In some cases you might require it a little stronger than in other cases. The only way to determine is to try. In this case I used German silver wire, but I am not sure what the gauge of the wire was that I finally used, but I think it was 24 or 26 Brown & Sharp's gauge. These springs were gold-plated. I do not know that I have anything more to say at present.

ANNUAL CLINIC OF THE ALUMNI ASSOCIATION OF NORTHWESTERN UNIVERSITY DENTAL SCHOOL, HELD AT THE COLLEGE BUILDING, FEB. 22, 1901.

Reported by Ralph W. Parker, D. D. S.

Clinic No. 1.—By Dr. G. V. Black, Chicago. Dr. Black exhibited his instruments for measuring hand and mallet force, the manudynamometer and the tuptodynamometer respectively. With these instruments the amount of force used in hand pressure as well as mallet pressure work was easily recorded in pounds and a conclusion arrived at in regard to the amount of force which is required in placing amalgam or gold fillings.

Clinic No. 2.—Oral surgery clinic by Dr. Thos. L. Gilmer, Chicago.

Case No. 1. Patient, Mrs. B., age 25 years. An alveolar abscess resulting from death of pulp in right upper first molar, opening into antrum. Necrosis of bone around roots to such an extent as to exclude the possibility of saving tooth. Tooth was extracted and necrosed bone removed. Wound thoroughly curetted and irrigated and packed with aseptic gauze for drainage.

Case No. 2. This was a case for advice. Patient, Mr. C., 30 years of age. Several months previous an upper left third molar had been extracted. In the extraction of the tooth the alveolar process had been fractured and the floor of the antrum exposed. The opening made into the antrum by this accident had failed to fully close. The advice was to attempt a closure by stimulating granulation tissue on the margins of the cavity, by the application of silver nitrate. In case of failure as a result of this treatment it was recommended that flaps be dissected from the adjoining gum tissue and united, making a permanent closure.

Case No. 3. Patient, Mr. C., 19 years old, from whose mouth a composite odontoma weighing 9.151 grams had been removed at a previous college clinic. The tumor occurred on the lingual surface of the body of the inferior maxilla on the right side. So much absorption of the bone had taken place that but a small portion of the buccal plate and body of the right side of the maxilla remained.

Clinic No. 3.—Surgical clinic by Dr. Geo. W. Cook, Chicago, This was a case of replantation for cure of pyorrhea alveolaris. Patient, Mr. S., age 55 years. Upper right central incisor much elongated and loosened was removed and properly prepared for replanting. Socket was deepened and enlarged and tooth inserted and held in place by silk ligatures. Ascestoria was used as local anesthetic.

Clinic No. 4.—Dr. Chas. P. Pruyn, Chicago. Clinician removed the pulps of two anterior teeth by use of potassocaine under pressure. Clinic showed what can be done in the way of immediate removal of pulps in cases well adapted to this manner of procedure.

Clinic No. 5.—Dr. A. Gordon Finney, Wilkesbarre, Pa. Dr. Finney's clinic was a great success. He removed over one hundred teeth from half as many patients and all pronounced the operations as painless. Clinician employed the Eureka local anesthetic and in his hands it certainly proved a success.

Clinic No. 6.—Dr. Elgin MaWhinney, Chicago. Clinician filled the root canals of two teeth, using sandarac varnish and gutta-percha. Pumped canals full of alcohol to displace all moisture, then into alcohol pumped the solution of sandarac varnish, then placed the gutta-percha cones into canals in usual manner. Points to be gained are: First, the possibility of filling very small canals, which could not be filled with chlora-percha, and, second, the absence of soreness following operation.

Clinic No. 7.—Dr. Robert Good, Chicago. The treatment of pyorrhea alveolaris by the Younger method. Clinician exhibited the proper instruments to be used in treatment of pyorrhea cases and also demonstrated their use.

Clinic No. 8.—Dr. A. H. Peck, Chicago. Surgical clinic. Treatment of chronic alveolar abscess, cutting through the alveolar plate. Patient, Mr. D., age 25 years. Abscess of over one year's standing, due to death of pulp in upper right lateral incisor. Carious bone between lateral and central incisors was removed, bone curetted, wound thoroughly cleansed and packed with aseptic gauze for drainage.

Clinic No. 9.—Dr. L. W. Nevius, Chicago. Extraction of teeth under nitrous oxide gas. Dr. Nevius demonstrated the use of nitrous oxide gas for the painless extraction of teeth and showed the forceps which in his practice he has found best adapted for use. The clinic as usual was very successful and very interesting.

Clinic No. 10.—Dr. W. O. Vallette, Goshen, Ind. Practical ideas in crown and bridge work. Clinician's method of backing porcelain facings for crown and bridge work was as follows: After facing is ground as desired, then a pure gold backing is carefully and accurately fitted. This is removed and a backing made of coin gold. The coin gold backing and pure gold backing are then soldered together. The result is a stiff accurately fitted backing. The chances of checking the porcelain are lessened as the latter is heated but once.

Dr. Vallette's method of reinforcing the occlusal surfaces of gold crowns for bicuspids and molars was to swage a pure gold cusp with the same die used in making the cusp of the crown, the pure gold cusp so reduced in size as to fit into the crown. The inner cusp is then soldered to the cusp of the crown, with a small amount of solder. This renders the occlusal surface heavy enough to withstand wear and does not thicken the cusps, so that the crown cannot be set without a great deal of grinding. This method is especially recommended when crowns are placed over live pulps.

Clinic No. 11.—Dr. R. Rogers, Scales Mound, Ill. Proximo-occlusal amalgam filling; showing proper cavity preparation and the use of matrix in placing proximo-occlusal amalgam fillings.

Clinic No. 12.—Dr. Ira B. Crissman, Chicago. Gold filling in gingival cavity, without using rubber dam. Adjusting rubber dam without the use of clamps or ligatures.

Clinic No. 13.—Dr. Lucien Arnold, Chicago. Immediate pulp digestion, using kalium-natrium, and immediate root canal filling.

Pulp must be absolutely dead as pain results if alive. Kalium-natrium a very powerful saponifier. Clinician's method is to apply the kalium-natrium to the canal with smooth broach as long as there is any chemical action. The compound coming into contact with the moist contents of the root canal there is slight explosion and a flash. Apply until this flash will not occur. Then cleanse canal with 3 per cent peroxide of hydrogen and fill.

Clinic No. 14.—Dr. I. A. Freeman, Chicago. Removable bridges. Dr. Freeman's method of making a removable bridge is to crown the roots to be used as abutments with tapering caps of gold, then with the roots capped construct crowns to fit snugly on the caps. These crowns are then soldered to a gold plate, swaged to fit the mouth and the teeth to be supplied attached to the gold plate.

Clinic No. 15.—Dr. J. H. Prothero, Chicago. "A method of taking the bite." Dr. Prothero gave a very interesting clinic, showing how to get the proper arrangement of artificial teeth on the lateral motion occluding frame. The frame used was the Gritman.

Clinic No. 16.—Dr. George T. Banzet, Chicago. Gold filling demonstrating hand mallet and mouth reflector. Dr. Banzet showed a hand mallet with a needle like point in the end of the handle, for annealing and carrying his gold to the cavity, without having to lay his mallet down. The mallet head was circular with the handle inserted at the center, the advantage being that no matter whether the mallet turned in the hand or not, there was always a square blow given. The clinician demonstrated the use of a reflector which was attached to the bow of the rubber dam clamp upon the tooth into which was placed the gold filling.

Clinic No. 17.—Dr. F. B. Noyes, Chicago.

Clinic No. 18.—Dr. L. O. Green, Chicago. Banded Logan crown. The root having been prepared and the band fitted and the porcelain crown selected at a previous sitting, Dr. Green demonstrated the making of a banded Logan crown, from the making of the cope to completion. Particular attention was called to the method of trimming the investment so as to insure a complete union by the solder between the cope and the disc of pure gold between cope and porcelain.

Clinic No. 19.—Dr. Geo. E. Brown, Chicago. Dr. Brown showed a novel orthodontia wrench of his own invention.

Clinic No. 20.—Dr. R. C. Brophy and Dr. C. F. Bryant, Chicago. Baking continuous gum plate, using Close's body and Brophy's gasoline furnace. This clinic demonstrated that any dentist can do porcelain work if he feels so inclined and that the lack of electricity or gas need not debar him. A continuous gum case was made using Close's body and baked in the gasoline furnace.

Clinic No. 21.—Dr. F. H. Stafford, Chicago. Proximo-occlusal amalgam filling with celluloid matrix and Dr. Hewitt's sterion white alloy.

Clinic No. 22.—Dr. B. J. Cigrand, Chicago. Full dentures constructed to appear as bridge cases.

Clinic No. 23.—Dr. F. H. Skinner, Chicago. Obtunded sensitive dentine with ethyl chloride and inserted proximo-occluso gold filling in upper molar, starting filling with noncohesive and finishing with cohesive gold foil.

Clinic No. 24.—Dr. Edmund Noyes, Chicago. The insertion and proper finishing of a gold filling in the distal surface of an upper left central incisor.

Clinic No. 25.—Dr. A. Brom. Allen, Chicago. Dr. Allen exhibited a very handy device for holding porcelain facings while grinding them.

Clinic No. 26.—Dr. A. G. Johnson, Chicago. Clinician demonstrated the use of instruments of his own design, for cleaving the enamel from roots preparatory to crowning. The instruments were especially adapted for the work.

Clinic No. 27.—Dr. F. E. Roach, Chicago. Dr. Roach exhibited and demonstrated the use of the wedge lock removable facing for use in crown and bridge work. The wedge lock removable facing is the invention of Dr. Roach and has many advantages over the usual method. Clinician also exhibited pliers for soldering the wedge lock facing crowns without investing.

Clinic No. 28.—C. S. Demarest, Chicago. A pneumatic chisel and band driver.

Clinic No. 29.—Dr. J. Austin Dunn, Chicago. Clinician demonstrated the manner of using an antiseptic syringe of his own invention. Medicament cannot come in contact with the bulb. Air which operates the syringe is admitted through the bulb and a valve in the bulb end of the glass barrel prevents the liquid from entering the bulb.

Clinic No. 30.—Dr. John B. Palmer, Chicago. Porcelain crown.

Clinic No. 31.—Dr. G. Walter Dittmar, Chicago. Clinician inserted gold filling in the distal surface of an upper left cuspid tooth restoring the angle, using Rowan's gold cylinders. The cavity was very carefully prepared and the filling skillfully placed and presented a fine appearance when finished.

Clinic No. 32.—Dr. E. E. Lampert, Chicago. Dr. Lampert demonstrated the use of gutta-percha as a permanent filling material in positions where it will not be subject to wear.

Clinic No. 33.—Dr. H. C. Waack, Chicago. Clinician demonstrated the making of a seamless gold crown with porcelain facing. The facing formed a part of the model from which the seamless crown was made. The advantage is that we make the crown to fit the facing, after the facing has been ground to fit the case.

Clinic No. 34.—Dr. W. V-B. Ames, Chicago. Dr. Ames gave a very interesting table clinic on the cements, dwelling especially on the new process oxyphosphate of copper. This cement will set in contact with moist tissue and is especially adapted to refitting dentures which have become "misfits" by absorption, following extraction. The cement mixed to a creamy consistency is placed at the desired location and the plate inserted into mouth and pressed into place and the cement allowed to harden.

Clinic No. 35.—Dr. J. N. McDowell, Chicago. Orthodontia clinic.

Clinic No. 36.—Dr. E. Goldthorp, Chicago. Dr. Goldthorp demonstrated the preparation of the root for the making of a Davis crown. A thin sheet of gutta-percha was placed between the porcelain of crown and the root. This had the advantage over cement in that it is insoluble.

Clinic No. 37.—Dr. J. W. Erringer, Chicago. Dr. Erringer demonstrated the use of steel pins for retaining the rubber dam in filling gingival cavities.

Clinic No. 38.—Dr. P. A. Palmer, Chicago. Dr. Palmer exhibited a number of teeth that had been filled with celluloid.

Clinic No. 39.—Dr. J. H. Prothero, Chicago. Dr. Prothero demonstrated the crushing stress of porcelain facings, using Dr. Black's Fago-dynamometer.

Clinic No. 40.—Dr. J. N. Crouse, Chicago. Dr. Crouse exhibited an engine mallet invented by Dr. S. G. Perry of New York City. The plugger point can be set at a right angle, or at an angle of 45 degrees or parallel with the hand piece.

Clinic No. 41.—Dr. B. D. Wycoff, Chicago. Dr. Wycoff exhibited a patent attachment to be used in removable bridge work, the invention of Dr. Griswold, of Denver, Colorado. The little attachments could be more nearly described by saying they are similar to the ordinary glove fasteners. By means of these the bridge is held in position.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE DENTAL FEE.

We have been asked by many dentists about the proper fee to be charged for a given operation. This is a matter that must be settled by the operator himself. The question of light or good weather will sometimes enter into the value of a fee. On a dark day in Chicago no operator can match inlays or teeth so well as he can when the sun is shining. Roots of teeth cannot be cleaned and filled when it is too dark to see, even though an electric light is used for illumination. The highest fees are charged on the days when the dentist is in the best physical condition and all the surroundings are pleasant and agreeable. We do not believe that the fees should be arbitrary for all cases and the same fee should not be charged for time that is spent fruitlessly when the operation could have been done at some other time better and more quickly if it had been deferred. We do not believe in the hour charge at any time as any bricklayer can dawdle away his time and not do good, efficient work for his employer. If you can deliver the service so that it will have its value behind it your charges cannot be questioned. What might be a high fee in a town of three thousand inhabitants might be very low in a city of a hundred thousand. We do not believe in a minimum fee in all cases as there will always be some one that it would be a pleasure to render a service for, at a fee which such a person could pay. We have had cases where if the hour charge had been in vogue the operation would in all probability have been a failure as it does not offer to any one the highest financial reward. The dental fee should be based on the proposition that all the surroundings and details are of such a character that it cannot be questioned. The neophyte can hardly be expected to make such fees as his neighbor who may have been in the harness for years and who has a past that is rich in acquired skill and knowledge. You will certainly do well to estimate the value of your services high enough so that you can walk along with members of other professions of your own age and experience shoulder to shoulder. You have a house to provide and children to educate and a fund to save for old age and if your professional life is to be forty years you ought to be able to save a thousand dollars a year during that period.

Most of the men we know do not give the smaller details of practice that close attention which justifies even a little fee. If they would overcome this and leave out the purely commercial aspect of so much for a filling or crown or plate, and refuse to give what are called estimates for services, they would rise in the minds of their prospective clients like a cake of yeast. We have never been able to countenance this practice, and when in a moment of weakness we have done it we were never a gainer by it. It is not possible to discuss the fee question except in a general way. If any one is inclined to take a hand at it we will give him a show.

THE NEW MOVEMENT IN ST. LOUIS.

Our readers may have noticed that a new society has been organized in St. Louis. The reason for this organization is the bringing together specialists in other departments of cognate interest. The organizers intend having lawyers, artists, specialists in medicine, chemistry and other departments of special work in human knowledge to enlighten each other. It will be a local Royal society, and those who wish to get in will have to do so by extra hard work in a special line. No hasty papers written on your cuffs on the way to the meeting will be allowed. This is right. Many papers presented by good men are written in this way. They do not reflect the best thoughts, and they do not attract attention when read that would be given were they the result of study and labor. Artists ought to know something about dentistry and dentists should know something about art. Dentists should know about the diseases of the throat and the nose, and specialists in those lines ought to know more about dental pathology and therapeutics than they now know. We welcome this new society, and expect much good to come from its working in a new field.

THE SPRING MEETINGS.

Shortly after this issue of THE DENTAL REVIEW reaches the reader Iowa, Kansas, New York, Maryland and other States will hold their annual meetings—May and June will follow with a greater number—all provided with attractive clinics and literary programs. Members of the profession in every State should be enrolled under the banner of the State society. The State organization is the post graduate school for most of the recent graduates and they should endeavor to fit themselves for the future conduct of these bodies. In a general way we think that the State meetings should have their own men for essayists as it has a tendency to stimulate and make them easy writers. When it comes to clinics the best and newest should be given wherever it can be found. Crude essays and papers are not to be trampled upon if the best has been done by a writer. In our somewhat busy experience we have noticed the gradual development of some of the best men, by giving them encouragement. All papers should be more or less brief, as long papers are usually tiresome unless they detail a line of experimental study and research. Give the boys a chance and help along the eaglets.

THE GOLD CROWN QUESTION.

How would you like to laugh if you had a glaring, shining gold crown on your incisor tooth or two of them? Every day as we travel on the street cars or in public conveyances we see evidences of the bad taste of thoughtless, careless and inartistic dentists. Why not use some form of porcelain crown on the anterior teeth at least? We have found on investigation that many of these crowns cover teeth that are only slightly decayed, in fact some of them are not carious at all. The sight of a young girl of fourteen to eighteen with a shining, gilt crown on a lateral incisor, exposing it every time she opens her mouth is not the highest expression of cosmetic art. We do not know what good a protest will do, but here it is. We protest against the gold crown on any of the eight anterior teeth, above or below, even though the tooth crown is already lost by accident or caries.

Sometimes men who wear moustaches may cover these hideous examples of the gold worker's art, but even then we believe that a porcelain face is a better expression of the attempt to restore a mutilation of a tooth by substituting something that resembles the lost organ. An old pivot tooth is better than a glaring gold crown. Why not discontinue this tendency to disfigure the human face divine? Will you use your influence to banish the anterior incisor gold crown?

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

NEW YORK, April 8, 1901.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir: Verily, a son has risen in the East. He arose to sustain the memories, the principles and practices, the monuments of those good old apostles, Varney, Webb and a few others, by presenting a paper entitled "Extension for Prevention," with special relation to gingival enamel margins in the preparation of approximal cavities, by Rodriguez Ottolengui, M. D. S.

Invitations to attend the meeting of the Second District Society of the Borough of Brooklyn, New York City, in the large hall of the Argyle, on Monday evening, March 11, had been accepted by the Central Dental Association, of Northern New Jersey, the First District Dental Society, of the State of New York, the New York Odontological Society and the New York Institute of Stomatology, in consequence of which there was quite a large attendance.

The announcement in the program called out quite a number, no doubt. It was to the effect that "This paper raises a question which will be made the subject of a debate to follow the reading of the paper."

DEBATE.

"*Resolved*, That it is necessary to the further safety of carious teeth that the gingival enamel margins in approximal cavities should he extended so as to lie under the gingival gum septa."

Affirmative: Dr. C. N. Johnson, Chicago; Dr. G. V. Black, Chicago; Dr. E. K. Wedelstaedt, St. Paul; Dr. M. L. Rhein, New York.

Negative: Dr. E. T. Darby, Philadelphia; Dr. B. Holly Smith, Baltimore; Dr. Wm. H. Trueman, Philadelphia; Dr. S. G. Perry, New York.

The debate was to be followed by a general discussion in which all present were invited to engage. The announcement was also made in the program that in consequence of the importance of the subject of the evening, as well as the length of the program, all were earnestly requested to be in their seats punctually at 8 o'clock.

Although the meeting opened sharply on time, those who were announced to enter in debate did not conclude until just about midnight, so that the meeting was adjourned summarily that some justice might be done to an excellent collation the Second District Society had prepared. Many had departed for their homes long before this hour.

Dr. Ottolengui's arguments were as implied, i. e., against too liberal "extension for prevention." One being, that as the cavity extends toward the approximal angles of the tooth the same becomes more complex, and as the majority of those requiring dental services fall into the hands of the man of average dental skill, complicating their work, should not be recommended, because he thought they could do better by the old method. He also said that he never saw decay recur where fillings were *perfect.* His observations had been diametrically opposite to Dr. Black's, in that he believes that eighty per cent of the cavities he has seen which extended under gum margin were faulty, and that recurrence of decay is not frequent about small cavities. The Doctor also said, quite truthfully, that reputation is not always skill.

Dr. Black sent his reply to Dr. Ottolengui's paper. It was read by Dr. Jarvie. In it he said that he had not changed his views since expressed publicly in 1891, but believes that he cuts cavities larger and broader than heretofore.

Dr. E. T. Darby, of Philadelphia, came on in response to the invitation of the Second District Society. He remarked that he had great respect for Drs. Black and Johnson and believes their practice good. Many things must be taken into consideration in practicing "extension for prevention." At twelve years there is practically no interproximal space while at forty-five there is some, either due to pathological to physiological changes. The

Doctor cited having in his practice patients of Elisha Townsend who had placed gold fillings in teeth fifty-five years ago, when extensive cutting of tooth structure was necessary for manipulation of gold and instruments properly. He believes that Dr. Johnson and others of his following use judgment as to when to cut and when not to cut. If a man does not know when not to, he has poor judgment. There is no fixed rule when he shall or when he shall not. Radical extension is unnecessary practice, consequently not good practice.

Dr. Wedelstaedt, of St. Paul, Minn., sent a lengthy résumé. It was the rakiest whirlwind that we have heard in many a day. It was read by Dr. Hillier, the recording secretary of the Second District Society, and it must be said, that Dr. Wedelstaedt could not have delivered it more effectively himself.

Dr. Wedelstaedt's paper opened with "The smallest doubts often shatter the greatest faith." He referred to Dr. Black's dogmas—and as to how he treats children of twelve and persons of forty. He said that Dr. Ottolengui could not know the use of Dr. Black's finishing instruments and that he speaks of methods of forty years ago.

He said that he had recently had sent to him a lot of extracted teeth and together with a lot more he picked up elsewhere he selected one hundred approximally filled ones for examination, eighty were filled with amalgam, twenty with gold; eighty-five were defective, fifteen were good.

This examination seemed to instill a thrust at the essayist for he said: "If he had written a paper on some of the unskilled workmanship he would confer a favor, rather than assail one whom he does not know the methods of."

He believes filled teeth are more prone to decay than unfilled ones.

Commenting upon Dr. Ottolengui's paper further he says that the ideals of 1875 are not the ideals of '85 or '95 or 1901. Dr. Wedelstaedt's paper withal was summed up subsequently as, "too much Johnson" "and Black," more, it must be admitted, of the latter. Dr. Wedelstaedt's purpose seemed to be to ridicule the essayist, to dismember him mercilessly, but in his ardor he overstepped good judgment and thus turned the tide of ridicule against himself. Dr. Ottolengui and the school of conservative tooth conservers were well supported by good speakers with good arguments.

Dr. B. Holly Smith, of Baltimore, spoke of some of the wonderful operations of Chapin A. Harris and other of our early century operators whose work it is his pleasure to see at times. He said, the man would be a vandal who would remove one of those fillings and replace by any method of these days.

He told a story, the wit of which is attributed to Lincoln. During the preparations for the war of the sixty's the cabinet at Washington were busy determining upon the qualifications that a man must exhibit to enter the army; his height, sight, hearing, etc., etc., and the length of stride. This latter seemed to impress the cabinet most, and as there was some doubt as to the correctness of the opinions of the several members, it was decided that the question as to what should be the proper length of leg, was to be submitted to Mr. Lincoln.

His reply to the same was that he did not see that it made much difference so long as they reached the ground.

Dr. Smith always has more than one good story to tell and he did so that night.

Dr. C. N. Johnson's paper was presented to the members by Dr. Brewster, owing to the inability of the doctor to be present.

He thanked Dr. Ottolengui (as a few other debaters had done) for the privilege accorded him of reading Dr. Ottolengui's paper before presentation to the society. Dr. Johnson seemed to desire to make the impression, as did Dr. Black, that judgment should be exercised, as to when to extend for prevention and when not to, and cited cases where it would be folly.

Decay, he said, usually recurs at the "angle" (gingivo-buccal, gingivo-lingual, etc.,) which eventually involves the whole filling. The finishing of the filling seemed to be of vital importance to this debater who considered that the tearing of the gum tissue in endeavor to finish was a serious detriment for what reforms is essentially scar tissue.

Dr. Wm. H. Trueman, of Philadelphia, was present and said that twenty-two years ago he read a paper on "Why do fillings fail?" and we are still asking the question.

He remembers Robert Arthur, who first expounded the theory of separation for prevention, who demonstrated to the profession of those days by statistics, models, etc., that were convincing, but how disastrous that practice has proven. If the Black-Johnson practice becomes effective will we not be called upon to extend in anticipation?

Dr. M. L. Rhein reiterated much of what has already been said by others as to judgment, and thought Dr. Ottolengui was in error in thinking Dr. Black did not at times fill small cavities.

Dr. S. G. Perry spoke very pleasantly and condolingly of the subject. The Doctor can always be depended upon to smooth the ruffled brow, as a kind and considerate parent does after listening to a tempestuous story of the children. He said that although Dr. Johnson seems sometimes inconsistent and radical a careful reading leads to different conclusions.

One important fact is that instruments are inclined to pack gold squarely (at right angles) against the cervical margins and diminishes as the angles are reached.

The Doctor said that he does not think that we are always called upon to do perfect work in the human mouth, that many times the least work, least pain, least expense, the better.

After all it is not so dreadful to place small fillings, that may give rise to recurrence of decay, that may be replaced some day when necessary.

Dr. Ottolengui concluded the debate by saying that the subject was not closed as yet; that he was going to Chicago in May and there resume the subject.

The New York Odontological Society had for their essayist on Tuesday, March 19, 1901, Dr. G. Alden Mills, who read a paper on "Dental Caries a Disease," which was very ably written and contained many of thoughts in a different vein than we are generally favored with.

The Alumni Association, of the New York College of Dentists, banqueted together at the Hotel Majestic on Saturday evening, March 16. Those who responded to toasts after the opening address of the president were: Dr. Faneuil D. Weisse, the dean of the college; Dr. J. F. P. Hodson, toast, "The Oldest Graduate." His speech was fine. Full of reminiscences of the first year at the (then) new dental college in New York.

Dr. F. LeRoy Satterlee, toast, "D. D. S., as a Specialist of Medicine."

Dr. J. Howard Reed, toast, "Suggestment."

Dr. J. Bethune Stein.

Dr. Arthur L. Swift, toast, "Our ex-Presidents."

Dr. Sommerville, of Buenos Ayres, was a guest. He gave some light on dental practice in South America.

He was the first president of the first dental association in South America.

Mr. Nash, president of the class of the N. Y. C. D., 1901, responded to the toast of the "Graduate."

The First District Dental Society held the regular meeting on March 12.

Dr. G. Lenox Curtis, of New York, presented cases on oral surgery, and Dr. H. W. Gillett, of New York and Newport, talked on dental questions and suggestions.

Dr. Wm. Carr was presented with a cup, purchased from the funds of the society. Dr. Safford G. Perry did the honors, speaking very feelingly and in a happy way.

I would like to give you fuller details of these latter happenings but the hour is here to mail this, which if not done will preclude publication this month.

At the request of the executive committee of the Institute of Stomatology, the governors of the New York Skin and Cancer Hospital arranged for a special clinical lecture on "Syphilis of the Mouth and Throat," which was given in the hospital on March 28, by D. Bryson Delavan, M. D., consulting physician to the hospital.

The members of the Institute of Stomatology, the Odontological Society and the Psi Omega Society were specially invited to be present.

About sixty representative men from New York, Brooklyn, New Jersey and "Down East" as far as Rhode Island, put in an appearance and listened with attention to Dr. Delavan's forceful utterances.

He called attention to various lesions of the mouth which might be mistaken for the syphilitic mucous patch and showed some of the marked differences. He emphasized the fact that the dentist should be informed, when a patient suffering from this disease was sent to him, of its nature, even if the physician had to apparently divulge a secret, claiming that the dentist occupied the same confidential relation as the physician—would be in honor bound to keep silent, and was entitled to protection at the hands of the physician. This statement of Dr. Delavan's elicited much applause.

He went into the subject of proper sterilizing of instruments with much detail, advised having duplicate sets for serious work.

Said infection might occur after the lapse of years. Through the kindness of Dr. Delavan there were present several patients, so that illustrations might be had of some of the characteristics of this lesion. Lectures of this kind by competent physicians and surgeons before thinking, investigating dentists, do much to cement the bonds of fellowship and usefulness.

After the lecture, Dr. Chas. O. Kimball, one of the governors, presented the claims of the hospital, spoke of its valuable work, and said it was the only one of the kind in this vicinity, if not in the United States, supported by voluntary subscriptions. The building is an exceedingly fine one, corner Nineteeth St. and Second Ave., four or five stories high, very light and well aired, and is in every way complete.

The Institute of Stomatology held its regular April meeting at the office of Dr. Horace J. Parker, 27 West Thirty-eighth St., on the 2d inst.

Under the heading of "Incidents of Office Practice" Dr. F. Milton Smith showed some instruments for trimming plastic fillings.

Dr. John B. Hawes then read a paper giving some very interesting reminiscences of his father, the late Dr. George Edward Hawes.

J. C. Bierwith, M. D., of Brooklyn, then read a paper on "Uric Acid in its Relation to Disease with Special Reference to the Diseases of the Oral Cavity."

While his paper was valuable in many ways from a chemical standpoint, his knowledge of dental matters was somewhat wanting, and in some instances he spoke of a state of affairs which the dentist would consider unlikely to occur. He advised special care as to proper food together with sufficient exercise in the open air, and total abstinence from a meat diet, in the treatment of all uric acid troubles. He did not mean by this that he was a vegetarian, nor specially advise a strictly vegetarian diet, but emphasized the fact that much more meat is eaten than the system can assimilate.

Dr. C. B. Parker in an open discussion, gave several cases in his own practice, with results of treatment.

Drs. Raymond and Bogue took part also, both agreeing in the main with Dr. Bierwith's deductions.

This is the "Annual" period in the district societies—election of officers, etc.; as the regular annual meeting of the State society occurs at Albany next month, we cannot give you any news from them this time. Sincerely, "THE BOROUGHS."

DENTAL EXAMINING BOARD.

WAR DEPARTMENT,
SURGEON GENERAL'S OFFICE,
WASHINGTON, March 16, 1901.

TO THE EDITOR OF THE DENTAL REVIEW.

Dear Sir: By permission of the Surgeon General, I have the honor to inform you that the following named gentlemen have successfully passed the examinations before this board, and have received their appointments as Contract Dental Surgeons, U. S. Army:

Siebert Davis Boak, graduate of National University, Dental Department, Washington, D. C., of Martinsburg, W. Va.

Edward Clarence Lauderdale, graduate of University of Buffalo, Dental Department, Buffalo, N. Y., of Naples, N. Y.

These gentlemen have been ordered to report for duty at San Francisco, Cal., April 15, for service in the Philippines.

At the present writing there have been fourteen gentlemen ordered before this board by the Surgeon General for examination. Only two, as you see by the above report, have successfully passed the examinations. The board has been disappointed in the professional qualifications of most of the young men who have presented themselves. The examinations do not cover any subjects which have not been taught in our best dental schools, and the board believes that the questions submitted in the examinations have been of a practical nature, and eminently fair. It is to be hoped therefore that our dental schools will not recommend any young men to come before this board who are not thoroughly well qualified, theoretically and practically, in all of the branches comprising the curriculum of our best dental schools.

It will be the pleasure of the Examining Board of Dental Surgeons to keep the profession posted as to its work, through the various dental journals.

Kindly acknowledge receipt, and oblige,

Very respectfully, JOHN S. MARSHALL,
President, Examining Board of Dental Surgeons, U. S. Army.

FEDERATION DENTAIRE INTERNATIONALE.

L'odontologie having kindly put its columns at the disposal of the International Dental Federation for the periodical publishing of a bulletin of the proceedings, resolutions and news concerning the federation, the council accepted and decided that said bulletin should be issued at the end of December, 1900, and published in French, English, German and Spanish.

Firstly let us recall that the International Dental Congress resolved that an International Dental Federation should be created and that the national comittees promoted in view of this congress should be maintained and constitute this International Dental Federation.

It is also resolved that the said federation, formed of all the existing national committees, should be represented by an Executive Council. A resolution was also passed that the first Executive Council, consisting of nine members, should be appointed by the members of the congress at the general meeting of the 14th of August, and that its powers should expire at the opening of the fourth international dental congress, which it will organize.

The Executive Council was instructed to appoint the International Educational Committee at its first sitting to be held on the 15th of August at 9:30 A. M. in the Ecole dentaire de Paris.

In accordance with the resolution passed at the closing general meeting, on the 14th of August, the International Commission consisting of MM. Aguilar, Cunninghan, Förberg, Godon, Grevers, Harlan, Hesse, Pichler and Sauvez, held its first sitting on Wednesday, August 15, at the Ecole dentaire de Paris.

All the members were present at this meeting, with the exception of Dr. Hesse (who had deputed his powers to MM. Godon and Sauvez) and Drs. Grever and Pichler.

The meeting elected as chairman, M. Godon and as secretary-treasurer, M. Sauvez, and voted the following resolutions:

The office of the Executive Council shall be for the present situated in Paris, France, at the Ecole dentaire de Paris (45 rue de la Tour-d'Auvergne), and abroad at the address of each member of the commission.

The title chosen is that of: Conseil Exècutif de la Fèdèration Dentaire Internationale.

The council shall consist of the nine titular members elected by the congress and of additional members chosen after consultation with the national committees. Their powers shall expire with the next congress. The council will be administered by its officers and represent the profession without any distinction as to nationality.

The officers will remain in office until the next meeting to be held in England in August, 1901.

The Executive Council shall draw up a scheme of regulations to be adopted at the next meeting, and shall fix the time and place of the next congress. The council has appointed and will add to the number of the International Educational Committee as well as to such other committees as may be deemed necessary.

The Committee on Education is composed as follows:

Aguilar, of Madrid.
Arkovy, of Buda-Pesth.
Brophy, of Chicago.
Burne, of Sydney.
Cunningham, of Cambridge.
Godon, of Paris.
Grevers, of Amsterdam.
Guillermin, of Geneva.
Giuria, of Genoa.
Hesse, of Leipzig.
Kirk, of Philadelphia.
Limberg, of St. Petersburg.
Martinier, of Paris.
Paterson, of London.
Queudot, of Paris.
Rosenthal, of Brussels.
Sandstedt, of Stockholm.

The officers are ex-officio members of all committees, and will direct them until each committee is constituted.

A subcommittee of three members was appointed to prepare and draw up a report on a scheme of regulations.

A report will also be prepared by the subcommittee on the organization of the Committee on Education and will be laid before the meeting in England.

The Executive Council will hold its next meeting in England, in August, 1901, at the same time as the annual general meeting of the British Dental Association.

The subcommittee, composed of MM. Cunningham, of Cambridge, Godon and Sauvez, held its first meeting on the 28th of November. Several resolutions were passed, among which should be mentioned the foundation of an *International Review*, which will be published in December, and contain the official reports of the Executive Council of the International Dental Federation.

The subcommittee also resolved to issue to the presidents and secretaries of the national committees a list of the resolutions passed at the closing sitting of the congress.

TRANSACTIONS OF THE CONGRESS.

The Direction Committee of the Executive Council in its sitting on the 4th of October, 1900, has, for its own part, voted the following resolutions:

1. The report on the proceedings of the congress will consist of three volumes, containing altogether, in about 1,800 pages, all the communications and contributions "in extenso," the stenographic notes of same, with illustrations and the various documents and their annexes in the languages used at the congress.

2. The national committees are requested to inform the General Secretary of the number of volumes they intend to subscribe, in the name of the societies or corporations, schools, technical newspapers, libraries and dental corporations, at the price of 36 francs for a set of three volumes, the number of the printed copies being limited.

3. Societies, schools, technical reviews, dental manufacturers and depots, chemists, and in general all those desirous of advertising in all languages in these volumes, and of addressing themselves to dentists all over the world, are informed that the price of a page, for advertisements, is 100 francs, and that of half a page, 60 francs (more than six pages being not devoted to such advertisements in each volume), and they may apply to Dr. Sauvez, General Secretary, 17, rue de Saint-Pétersbourg, and come to an agreement as to the wording and classification of their advertisements in the said volumes.

The free subscriptions, either from the societies, schools or individuals, are to be forwarded to M. Viau, Treasurer, 47, Boulevard Haussmann; the subscriptions will be more especially applied to the purchasing of the cuts, as all the other funds that the officers of the congress may be able to raise are, for the present, to be devoted exclusively to the book of proceedings.

NEW SUBSCRIPTIONS. SUBSCRIPTIONS TO THE VOLUMES OF THE TRANSACTIONS.

We are informed that M. Aguilar, in the name of the Spanish Committee, has subscribed for twenty-five copies of the Transactions and that the British Reception Committee have decided to devote the balance of its funds (750 francs) to the subscription of as many copies as such balance will permit. The *Association*

Générale des Dentistes de France have subscribed for ten copies of the same.

In our next number we will publish a list of such further subscriptions as may have reached us.

FOREIGN CORRESPONDENCE.

LETTER FROM GREAT BRITAIN.

ANATOMICAL PORCELAIN TEETH.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir: The discussion at the Odontological Society of Chicago on Dr. Perry's paper entitled "Scientific Occlusion and Articulation of Artificial Teeth," has been read with great interest, and Dr. Cigrand's beautiful diagrams have been studied with considerable care. Now, it appears to me, that the "porcelain question" is one that intelligent dentists throughout the world ought to take up and carry to a higher plane than it has hitherto reached. It seems extraordinary that so little progress should have been made in producing what I may term anatomical porcelain teeth. To any one who has made careful study of the human teeth, the substitutes supplied in porcelain by manufacturers will never be accepted as either typical or anatomical. It has often been a matter of surprise to me why manufacturers do not grow two kinds of businesses. One, the porcelain tooth business of supplying shirt button teeth and other eccentricities of genius for the use of conventional dentists. It is quite true, that the latter would not buy teeth by the thousand, but still given a number of intelligent and artistic dentists in every country, the outcome of supplying *their* wants would mean an immense advance in this matter.

I have on several occasions set up human teeth in wax on edentulous models, with a view of determining whether the anatomical tooth could be used. I had always been told that it was *impossible*, that it was *undesirable*, to use exact copies of the human teeth for prosthetic purposes. Now it appears to me after many years study of the matter, that this latter contention is absurd. Else why would the more intelligent dentists spend such pains and labor in reproducing from close study of nature, the natural cusps on all gold crowns? Why should so much labor be given to the better class and more artistic kind of bridge work, in developing suitable cusps to occlude to with upper or lower teeth, if it was considered that these characteristic eminences on the chewing teeth were unnecessary?

I have read Dr. Bonwill's description of his method of artificial occlusion in the Text-book of American Dentistry on several occasions, and I am rejoiced to find that able men in America have found it as difficult as I did to understand this meaning. I seems to me that it is no proof of genius to disguise information under such a verbal description that nobody but yourself can understand. My idea is that people of great ability made their work intelligible to ordinary people as well as to those who are deeply interested in the subject.

The natural teeth I used for my experimental work did not belong to one patient, but were teeth with undecayed crowns that I had gathered from various sources. Nevertheless, there was no difficulty in making anatomical occlusions with such teeth, and of reproducing, if necessary, the compensating curve that so many dentists·talk about, but do not practice. For this purpose I used an old fashioned plaster tail bite so constructed that I could see the internal occlusion of the cusps as well as the external. It would be an invaluable training in dental schools were the junior students made to do similar experiments.

Porcelain teeth are manufactured by the million for use, and with the best wish in the world to be pleased with what is offered to us by the manufacturers, it still remains diffcult for an intelligent dentist to supply a patient with teeth at all approaching the natural teeth in form and color. I had the opportunity of visiting a large manufactory devoted to this work, employing large numbers of hands. I was very much astonished to find in the carving room, where the molds were curved by patient Englishmen and Germans, that there were no natural teeth for them to study, that this great firm had never thought of making a museum of normal or anatomical human teeth, much less a collection of abnormal teeth. Now in the incisor teeth alone in a large number of cases the enamel surface is manufactured much too long, and it would often be an improvement, certainly with elderly patients, if we could show the root of the tooth instead of the enormous enamel surface so commonly used.

In the lower teeth in many porcelain sets the incisors will be found of the same size, whereas we know that in nature the central incisors are smaller than the lateral incisors. Canine teeth both for the upper and lower jaw, do not copy the natural curves of the human teeth, and they are very often bulky or rounded, where they are not so in nature. Bicuspid teeth somehow seem to offer more satisfaction or pleasure to the manufacturers to make suitable copies of the natural teeth, but when we come to the molars, anything more laughable than the conventional treatment of these beautiful teeth cannot be imagined. The fact that the upper molars are rhombic in form and the lower molars are squarer in form does not seem to interest the manufacturer, his conventions vex intelligent dentists all the time.

Some years ago I purchased some full sets of porcelain teeth, which I was assured were anatomical, and I took the trouble to set them up myself in order to find out if I could effect the occlusion of the masticatory surfaces of the teeth. This could not be done, because the molar teeth were made with flat surfaces, without proper cusps that would interdigitate with each other. I wanted to use these teeth for an intelligent patient who had some knowledge of anatomy and had worn artificial teeth for many years, but wanted teeth that *chewed.* I need not inform my readers that I had to grind all these teeth specially as Dr. Bonwill had described only that I made an offer to reproduce the natural cusps of the maxillary or mandibular molars. Crude as my effort was the result was satisfactory, and the patient declared that he was better pleased with the teeth that I had altered for him than any work he had used before. In this set I was careful to reproduce the compensating curve which is so commonly omitted by prosthetic dentists. It seems, therefore, high time, having entered a new century, that the need for anatomical teeth should be earnestly placed before the attention of manufacturers of porcelain teeth.

If the dentists of practical ideals throughout the world took this matter up, much advance could be made within twelve months. I am,

Yours faithfully,

WHITE JACKET.

REVIEWS AND ABSTRACTS.

OUR TEETH AND HOW TO TAKE CARE OF THEM. By VICTOR C. BELL, D. D. S. Young American Publishing Co., 111 Fifth Ave., New York. 70 pages. Cloth. Illustrated.

Any attempt to increase the knowledge of the nature of the teeth and to promote a proper care of them among children is a move in the right direction. It is much to be regretted, however, that Dr. Victor C. Bell has lost an excellent opportunity to do the first, and has very inadequately performed the second object in his recent little book, "Our Teeth and How to Care for Them."

The book is designed as a text-book for the class room and is commended "to the kindly consideration of teachers, school officers and parents." The chief defect in the whole effort is its unsuitability for the grade of children to whom it is supposed to appeal. The lessons are pitched far below the intelligence of the elementary classes. They are almost subprimary in character, and seem most suited to children of the kindergarten period. In other words, the children for whom its extremely simple structure seems designed have not yet reached the stage where teeth can be of interest, and children who could be benefited by lessons on this most important subject would find this work much too primitive to be of much interest.

The form of the studies may not be the fault of Dr. Bell, because we are told that the present little volume is an arrangement, made by a school teacher, of Dr. Bell's older work, "Popular Essays on the Care of the Teeth and Mouth." The pedagogue may be responsible, then, for the manner; but the good doctor must stand for the matter, some of which, we are sorry to say, seems the greatest jumble of obsolete thought and silly advice that could well be mixed together.

The book is too trivial to require further notice. It suffices to say that it seems totally inadequate for any useful purpose in the class room and hardly deserves the attention of those whose business it is to supply text-books to the young.

C. E. B.

MEMORANDA.

Dr. J. G. Templeton, of Pittsburg, has removed to St. Louis.

Dr. E. K. Wedelstaedt, of St. Paul, was in Chicago in March.

Dr. L. Richard-Chauvin is the editor of *L'Odontologie*, succeeding M. G. Vian.

Dr. Arthur W. Chance, of Portland, Ore., has just finished his medical studies and now holds the title M. D.

Exercises of the Chicago College of Dental Surgery will be held on April 30 instead of May 1, 1901, at the Central Music Hall.

Restore lost tissue with porcelain, lined with platinum. If it is from the labial face make the proper gum color and restore the contour.

The Kansas State Dental Society will meet in Leavenworth, May 8, 9, 10, at the Planters' Hotel. R. MATTHEWS,

President.

Mr. Wm. Findlay, for many years one of the trusted salesmen in the employ of H. D. Justi & Son, was married to Miss Starkweather, of St. Louis, April 2, 1901.

How do you get the color blended if the neck of the tooth is yellow and the cutting edge is blue unless the tooth is broken into two pieces and they are ground separately? Have you used the Peck system of making porcelain inlays?

The Griswold removable bridge work is steadily commanding the attention of those who feel the need of something secure and cleanly and which can be made of any material, placing it within the reach of persons of moderate means.

Dr. J. D. Patterson, of Kansas City, has been making arrangements for the next national meeting in Milwaukee and passed through Chicago in March. He says that there will be a large attendance and there will be many excellent papers.

Necrobiosis is the latest term applied to the wasting of sockets of teeth. Alveolitis was the term proposed by Witzel, of Essen, Germany. Choose the term you like best, but give the patient better treatment in the beginning and he will bless you.

KENTUCKY STATE DENTAL ASSOCIATION.

The annual meeting of the Kentucky State Dental Association, will be held in Louisville, on the 14th, 15th and 16th of May, 1901. The usual hotel and railroad rates will be procured. Address the secretary, F. I. Gardner.

The Seventh Annual Meeting of the Southern Wisconsin Dental Association will convene at Delavan, May 21, 1901, at 10 A. M., and last for three days. A cordial invitation is extended to all. J. H. REED,

Secretary.

NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

The fourth annual meeting of the Southern Branch National Dental Association will convene July 29, 1901, at Nashville, Tenn.

C. L. ALEXANDER,
Cor. Secretary S. B. N. D. A.

Sir Edwin Saunders, M. R. C. S., F. R. C. S., L. D. S., dentist to the late Queen Victoria, died recently at his home in London. Sir Edwin Saunders was the first dentist knighted by the Queen, the late Sir John Tomes being the second to receive this distinction. Sir Edwin had not been in active practice for several years.

On Saturday, April 6, a few members of the profession were gathered in the home of Dr. H. J. McKellops in St. Louis. Dr. McKellops has been ill for three months but is convalescing. Those present were Drs. J. D. Patterson, A. O. Hunt, P. H. Morrison, Gordon White, Robert Good, J. E. Hinkins and A. W. Harlan.

If you leave arsenic in a tooth for one week and then apply papain paste to the pulp and seal it in the tooth for eight or ten days, it is very easy to detach the partially digested pulp and fill the root at once. Why not try it? Do not use water to wash the pulp after removing the arsenic unless it is distilled or borated.

In children under fifteen why not use cement for filling proximal cavities in incisors for two or three years instead of filling with gold? A recent case shows the undesirability of placing large fillings in such teeth as both pulps died. At fifteen with the pulp dead in a girl's mouth the prospect is not inviting. How would you like it?

DENTAL SOCIETY OF THE STATE OF NEW YORK.

Thirty-third annual meeting, Albany, May 8 and 9, 1901. Officers for 1900–1901: President, J. I. Hart, New York; Vice President, R. H. Hofheinz, Rochester; Secretary, W. A. White, Phelps; Treasurer, C. W. Stainton, Buffalo; Correspondent, H. D. Hatch, New York.

The Oklahoma Board of Dental Examiners will meet at Oklahoma City May 7, at 10 A. M. for the purpose of examining applicants for licenses. Under graduates will be prepared to do practical work.

Yours very truly,
E. E. KIRKPATRICK,
Secretary.

PAN-AMERICAN EXPOSITION.

In case any of our readers should go to Buffalo to attend the exposition, Mrs. E. M. Bedell, formerly of Chicago, has taken a house at 238 and 240 Elmwood Avenue, having forty or fifty rooms to let, with or without meals. This will be a good place for children and families, as it is near the exposition grounds.

Did you ever use a tube tooth, incisor or cuspid instead of cementing a facing to the backing? In long "bites" this is a very secure method of restoring anterior teeth. Make your cope, solder the pin and sweat the crown on the pin with sulphur and set the crown with gutta-percha. Leave the pin long enough to project beyond the opening in the lingual part of the tooth. The pin should be of iridio-platinum.

CHICAGO DENTAL SOCIETY.

The following officers were elected at the annual meeting, April 2: President, A. B. Clark; First Vice President, Geo. B. Perry; Second Vice President, B. D. Wikoff; Recording Secretary, Elgin MaWhinney; Treasurer, E. R. Carpenter; Corresponding Secretary, C. S. Bigelow; Librarian, H. W. Sale. Board of Directors: E. Noyes, J. G. Reid, J. E. Hinkins. Board of Censors: W. V-B. Ames, C. N. Johnson, A. W. Harlan.

WISCONSIN DENTAL EXAMINERS.

The next and last meeting of this board for the year 1901 for examination of candidates to practice, will be held at Delavan, commencing Tuesday, May 21, at 9 A. M. All examinations are conducted in the English language, in writing. A practical demonstration is also required, and applicants must furnish their own instruments and patients. W. H. CARSON,

Secretary,

609 Goldsmith Building, Milwaukee.

IOWA STATE DENTAL SOCIETY.

The thirty-eighth annual meeting of the Iowa State Dental Society will be held at Clear Lake, May 21, 22, 23, 1901. The best meeting in the history of the society is assured, and all reputable dentists are invited to meet with us. Clear Lake is one of the most popular summer resorts in the West. Fine boating, fishing, etc. Low rates at hotels.

Yours fraternally,

J. C. BROWNLIE, *Secretary.*

The St. Louis Society of Dental Science held a special meeting Saturday evening, April 6, to receive Drs. Gordon White, A. O. Hunt, Robert Good, J. E. Hinkins, J. D. Patterson and A. W. Harlan. Speeches on a variety of topics were made by those present, and Dr. Angle, on behalf of the society, said that it was the intention of the organization to have artists, rhinologists, lawyers and dentists as members, and perhaps others. This is something unique in dental society organization and we wish to advocate its support by the profession in St. Louis. A very enjoyable evening was spent in the company of Drs. Fuller, Morrison, Chase, Windhorst, Bowman, Applegate, Pring, Hill, Baird, Kennerly and other members of this new army of crank workers.

NEW JERSEY STATE DENTAL SOCIETY.

The meeting to be held at Asbury Park, N. J., July 17 to 19 inclusive, promises to be the greatest meeting in the history of State societies from an educational standpoint. The applications already on file for exhibition spaces exceeds that of last year, insuring a display of dental appliances, etc., which will almost entirely fill the great auditorium. The young graduates will do well to avail themselves of this opportunity and so plan their vacation that they may combine business with pleasure, and see all the latest appliances which will be on exhibition.

The "Hornets" wish it distinctly understood that the "latch string" will be upon the outside of the door during the meetings.

Yours very truly, WM. L. FISH, *Chairman.*

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners, to examine applicants for a license to practice dentistry in this State, will be held in Chicago on the 2d, 3d and 4th of May, 1901, at the Chicago College of Dental Surgery, corner of Wood and Harrison Streets.

Candidates must come provided with the necessary instruments, rubber dam, and gold, to perform practical operations and such other work as is deemed advisable by the board. Those desiring to take the examination should matriculate with the secretary ten days before the date of meeting. The examination fee is ten dollars.

J. G. REID, D. D. S., *Secretary*,
1006 Champlain Building,
126 State Street.

OH! MI! DENTAL MEETING.

The third triennial meeting of the State Associations of Ohio, Michigan and Indiana, known as the original Tri-State Dental Meeting, will be held at the German House, corner of Michigan and New Jersey Streets, Indianapolis, Ind., June 4, 5 and 6, 1901, beginning at 10 A. M. Tuesday, June 4. All practitioners who conduct their practices in a manner to command the respect of their fellow practitioners are invited to attend and participate in the proceedings, whether they are members of a State association or not. These meetings are the largest and most interesting held in the United States. Fully eight hundred dentists will be present. The program includes some sixty clinics of great interest and importance, Railroad rates of a fare and a third for the round trip have been granted by the Central Traffic Association throughout the whole territory. For further information see the May journals, or address

GEO. E. HUNT, *Chairman*,
131 E. Ohio St.,
Indianapolis, Ind.

PATENTS OF INTEREST TO THE DENTAL PROFESSION, RECENTLY GRANTED.

667,869. Surgical chair, Charles F. Davidson, Canton, O.

667,723. Artificial tooth, Frederick A. L. Murdock, Meriden, Conn.

668,488. Amalgam-squeezing machine, James V. Coleman, San Francisco, Cal.

668,492. Cusp press for tooth crowns, Clifford A. Covalt, Philadelphia, Pa.

668,321. Seat raising or lowering mechanism for dental chairs, Richard W, Sonnex, County of Middlesex, England.

669,031. Dental press for compressing dental flasks, Joseph P Gomes Brooklyn, N. Y.

669,197. Vulcanizer and flask for dental purposes, Adam W. Feltmann and H. Hartwig, Chicago, Ill.

669,092. Dental regulator and spacer, Hugh H. Martin, Peoria, Ill.

669,402. Toothbrush, Carl Rose, Leipsic, Germany.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

INSTRUCTIONS FOR CONCENTRATING HYDROGEN DIOXID FOR BLEACHING DISCOLORED TEETH.

In a small, smooth, porcelain dish or saucer pour about one (1) ounce of Oakland hydrogen dioxid; then place it on a water bath, or on a sand bath, or on the back of a stove where it will be subjected to a gentle heat of not over 200° F.; and cover the saucer with a piece of loose paper to protect contents from dust; the solution slowly evaporates and as the bulk decreases the strength increases. This is due to the fact that the water of the solution is more volatile than the hydrogen dioxid. One (1) ounce of three per cent solution evaporated to one-quarter of an ounce, which should be accomplished in from thirty to forty-five minutes, gives a remainder which will test about twelve per cent. This is generally strong enough for all purposes (*stronger solutions can* be made *by continuing the evaporation* up to thirty per cent) and can be preserved for a considerable period in a loosely stoppered bottle, if not exposed to light.

A rubber dam is then adjusted to protect the patient's mouth, and the concentrated solution applied on a little cotton wrapped around a slender toothpick to the cavity of the tooth to be bleached. It is left there four or five minutes when a second application is made and in some cases a third. The action is accelerated if a slight draught of warm air is applied.

The bleaching can be effected in one sitting or in more than one, according to circumstances, and the applications made as often as is required. Subsequent treatment depends entirely upon the operator and requirements of the case. The tooth structure is not injured, and except in a very few cases the bleach is permanent. Where discoloration reappears it is only after a lapse of a considerable period of time, and in this event rebleaching has to be resorted to.

The advantage of this over the older methods where concentrated solutions of hydrogen dioxid have been used is that the dentist has never to handle a dangerous product. When concentrated solutions are packed in tightly stoppered bottles they frequently explode, and the accidents which have resulted from handling them are serious and numerous. With the present method the solution is never in anything but an open or loosely stoppered container and no explosion is possible. The dentist can supply himself with small or large quantities at very short notice according to his necessities. The cost is very much less and the bleaching solution which he obtains is purer and does the bleaching rapidly and safely.

THE UNIVERSITY DENTAL SCHOOL.

The arrangements for opening the new Dental School at the University in the beginning of Lent term—March 25—have been practically completed by the appointment of the following lecturers in the practical subjects:

Three lecturers in surgical dentistry: Messrs. R. Fairfax Reading, M. R. C. S., L. R. C. P., L. D. S. (Eng.); W. Septimus Hinder, D. D. S. (Philadelphia); and N. V. Pockley, D. D. S. (Philadelphia).

Three lecturers in mechanical dentistry: Messrs. A. C. Nathan, D. D. S. (Philadelphia), D. M. D. (Harvard); A. H. MacTaggart, D. D. S. (Philadelphia); H. S. du Vernet, D. D. S. (Philadelphia).

Practical instructor in mechanical dentistry: Mr. W. A. Gray, of Casino, late of the Paris Dental School.

These appointments have been made by the joint committee of the senate of the University and of the directors of the Sydney Hospital, and are subject to confirmation by those bodies respectively.

The curriculum will extend over a period of three years, and the subjects of study will be the following:—

First Year.—(1) Physics and practical physics; (2) chemistry, introductory and metals; (3) practical chemistry and metallurgy as applied to dentistry; (4) descriptive anatomy; (5) dissections; (6) anatomy of the teeth; (7) introductory surgical dentistry; (8) introductory mechanical dentistry; (9) hospital and laboratory practice in surgical and mechanical dentistry.

Second Year.—(1) Physiology and practical physiology; (2) dissections; (3) surgery and special dental surgery; (4) surgical dentistry; (5) mechanical dentistry; (6) hospital and laboratory practice in surgical and practical dentistry.

Third Year.—(1) Physiology, including special dental physiology and practical physiology; (2) regional anatomy; (3) materia medica and therapeutics; (4) pathology and bacteriology, with special reference to the mouth and teeth; (5) hospital and laboratory practice in surgical and mechanical dentistry.

The entrance examination to the curriculum is the ordinary matriculation examination of the University, with a proviso that persons who have been bona fide engaged as apprentices to a dental practitioner in New South Wales for a period of not less than twelve months before the 31st December, 1900, or have studied dentistry for a like period before the same date in a hospital with a special dentistry department, may be admitted to the curriculum without passing the preliminary examination, and provided that they enter upon the University curriculum not later than March, 1902.

The curriculum will lead to the license in dentistry, L. D. S. The students' time will be occupied in the mornings in attendance upon lectures and courses of practical instruction in the various laboratories of chemistry, physics, anatomy, physiology, etc., at the University and they will there receive their instruction from the University professors and lecturers. In the afternoons they will be occupied in attending dental practice at Sydney Hospital together with practical instruction in the mechanical laboratory established at that institution.—*The Daily Telegraph*, Sydney New South Wales.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-seventh annual meeting will be held in Rockford, May 14 to 17 inclusive. All members should make an effort to be present. The society is always glad to welcome reputable dentists who are not members, from this and other States.

The local committee has arranged for an informal reception on Tuesday evening in the parlors of the hotel Nelson. A short program has been prepared, and all in attendance are cordially invited to be present and spend a social evening.

Following is the program in full as prepared by the Executive Committee and the supervisor of clinics:

PROGRAM:

1. Dr. J. G. Reid, Chicago, "The Annual Address of the Society by the President."

2. Dr. A. W. Harlan, Chicago, "Report of Committee on Dental Science and Literature."

3. Dr. Hart J. Goslee, Chicago, "Report of Committee on Art and Invention."

4. Dr. T. F. Henry, Streator, "Why Fillings Fail." Discussion opened by Dr. R. W. Hood, Monmouth; continued by Drs. J. W. Cormany, Josephine D. Pfeifer, I. B. Newsome and others.

5. Dr. J. J. Reed, Rockford, "Cement Anchorage for Fillings." Discussion opened by Dr. W. V-B. Ames, Chicago; continued by Drs. J. E. Keefe, S. F. Duncan, J. E. Hinkins and others.

6. Edwin Hedrick, Esq., Peoria, "Dental Jurisprudence." Discussion opened by Dr. C. R. E. Koch, Chicago; continued by Drs. J. N. Crouse, E. Noyes, I. B. Crissman and others.

7. Dr. Israel P. Wilson, Burlington Iowa, "Anomalous Cases of Malformed Teeth, with Suggestions as to Possible Causes." Discussion opened by Dr. G. V. Black, Chicago; continued by Drs. F. B. Noyes, J. H. Prothero, Geo. T. Carpenter and others.

8. Dr. Garrett Newkirk, Los Angeles, Cal., "Preventive Dentistry." Discussion opened by Dr. C. N. Johnson, Chicago; continued by Drs. D. M. Gallie, G. W. Whitefield, Geo. B. Perry and others.

9. Dr. Alfred O. Hunt, Chicago, "Air Chambers—Uses and Abuses." Discussion opened by Dr. T. W. Pritchett, Whitehall; continued by Dr. J. H. Woolley, G. A. Thomas, G. M. Brunson and others.

10. Dr. J. N. McDowell, Chicago, "Orthodontia"—(Illustrated with lantern slides). Discussion opened by Dr. C. DeWitt Lukens, St. Louis; continued by Drs. A. E. Matteson, C. C. Corbett, Grafton Monroe and others.

11. Dr. George A. McMillen, Alton, "Submarine Gold" (Illustrated by stereopticon lantern). Discussion opened by Dr. John E. Nyman, Chicago; continued by Drs. L. W. Skidmore, E. H. Allen, J. E. Keefe and others.

12. Dr. A. H. Peck, Chicago, "Antiseptic, Germicide and Disinfectant." Discussion opened by Dr. R. N. Laurance, Lincoln; continued by Drs. E. K. Blair, J. E. Hinkins, C. B. Rohland and others.

13. Dr. J. B. Dicus, Chicago, "The Physiological Function of Saliva." Discussion opened by Dr. F. B. Noyes, Chicago; continued by Drs. C. P. Pruyn, W. A. Johnston, D. E. Coulson and others.

14. Dr. George D. Sitherwood, Bloomington, "Microbiology and Office Clinic." Discussion opened by Dr. G. W. Cook, Chicago; continued by Drs. A. W. Harlan, E. R. Carpenter, J. M. Barcus and others.

15. Dr. B. J. Cigrand, Chicago, "The Philosophy of Mastication—Relative to Artificial Dentures." Discussion opened by Dr. E. J. Perry, Chicago; continued by Drs. J. H. Kennerly, F. N. Brown, T. W. Pritchett and others.

16. Dr. J. E. Hinkins, Chicago. Report of Supervisor of Clinics.

CLINICS.

1. Dr. A. W. Harlan, Chicago. Pyorrhea alveolaris.

2. Dr. J. W. Cormany, Mt. Carroll. Gold filling, using Bonwill's mechanical mallet.

3. Dr. J. E. Hancock, Joliet. Porcelain crown.

4. Dr. J. R. Callahan, Cincinnati, Ohio. Gold and tin in definite proportions for filling.

5. Dr. F. E. Roach, Chicago. Practical application of the wedge-lock facing.

6. Dr. C. C. Corbett, Edwardsville. Amalgam filling, cement anchorage.

7. Dr. C. DeWitt Lukens, St. Louis, Mo. Orthodontia.

8. Dr. W. H. Taggart, Chicago. A E. Peck's complete system for making porcelain inlay and restoration to absolutely fit the cavity.

9. Dr. F. H. McIntosh, Bloomington. A method of building up broken down bicuspids and molars preparatory to receiving a gold crown.

10. Dr. W. T. Reeves, Chicago. Porcelain inlay or restoration. Exhibition of the Hammond electric furnace.

11. Dr. Truman W. Brophy, Chicago. Surgical clinic.

12. Dr. B. D. Wikoff, Chicago. A novel method of making a bridge.

13. Dr. E. H. Allen, Freeport. Gold filling.

14. Dr. A. W. McCandless, Chicago: (*a*) Setting crowns and bridges with gutta-percha, using Kerr electric annealer to soften the gutta-percha; (*b*) alteration of plaster model, adapting ideal dental base plate to insure snugly fitting denture.

15. Dr. Thos. L. Gilmer, Chicago. Surgical clinic.

16. Dr. O. A. Chappell, Elgin. Application and use of dead soft gold.

17. Dr. W. V-B. Ames, Chicago. Subject to be announced.

18. Dr. Chas. P. Pruyn, Chicago. Pressure anesthesia for removal of a live pulp.

19. Dr. Josephine D. Ffeifer, Chicago. Filling root canals.

20. Dr. A. F. James, Oak Park. Ladmore and Bronson matrix.

21. Dr. Elliott R. Carpenter, Chicago. Pyorrhea at root bifurcations and its treatment with oxyphosphate of copper.

22. Dr. D. M. Cattell, Chicago. Filling a proximo-occlusal cavity in a bicuspid or molar; gingival one-third with noncohesive cylinders or mats; occlusal two-thirds, including step anchorage, with cohesive gold.

23. Dr. E. A. Royce, Chicago. Demonstration of the varying shades of the natural teeth in the same mouth as applied to artificial dentures.

24. Dr. Robert Good, Chicago. Pyorrhea alveolaris. Younger's method.

25. Dr. C. N. Johnson, Chicago. Preparation of cavities.

26. Dr. S. F. Duncan, Joliet. Gold filling, using the Berry electric engine and mechanical mallet No. 2.

27. Dr. L. K. Stewart, Chicago. Long bites in continuous gum work.

28. Dr. W. W. Shryock, Fort Wayne, Ind. Swedging seamless gold crown.

29. Dr. I. B. Crissman, Chicago. Labial cavity extending under the gum, filled with De Trey's gold, without rubber dam.

30. Dr. Geo. A. McMillen, Alton. Use of submarine gold.

31. Dr. A. O. Hunt, Chicago. Uses and abuses of air chambers, also W. E. Griswold's removable bridge.

32. Dr. A. G. Johnson, Chicago. A novelty for the assistance of annealing and carrying gold.

33. Dr. J. S. Bridges, Chicago. Porcelain inlay, demonstrating the Ash swedge.

34. Dr. C. B. Rohland, Alton. Subject to be announced.

35. Dr. J. H. Prothero, Chicago. Arrangement and occlusion of teeth.

36. Dr. J. O. Brown, Chicago. Contour filling, using Watt's crystal gold.

37. Dr. J. W. Slonaker, Chicago. Nitrous oxide gas.

38. Dr. G. W. Dittmar, Chicago. Gold filling. Proximo-incisal cavity; step anchorage; showing cavity preparation and gold filling—using Rowan's cylinders and No. 20 extra cohesive foil.

39. Dr. W. F. Green, Evanston. Subject to be announced.

40. Dr. L. L. Davis, Chicago. Celluloid cement filling.

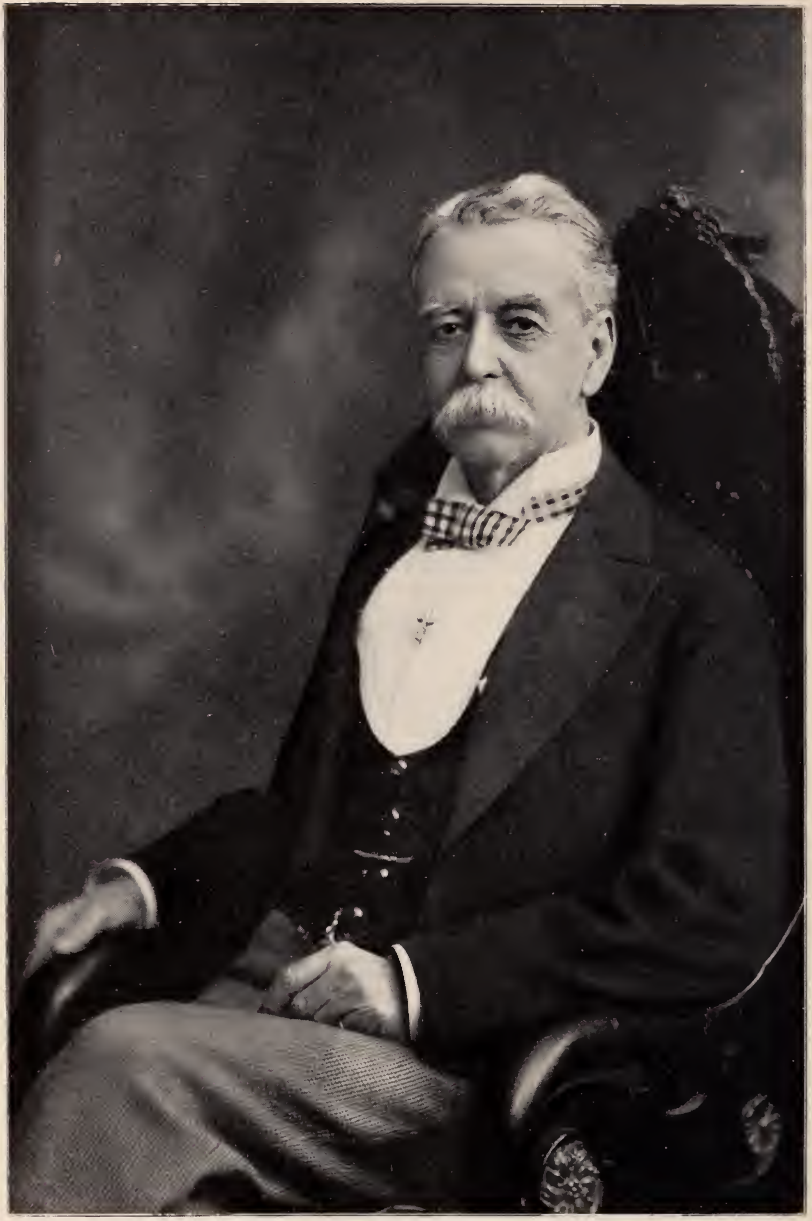
41. Dr. C. S. Case, Chicago. Restoration of facial contours by a combination of orthopedia and prosthesis; especially applicable for cleft palate patients.

42 Dr. C. B. Powell, Jacksonville. Treatment of root canals, demonstrating the use of a new broach holder of the clinician's own design.

43. Dr. G. V. Black, Chicago. Demonstrations of mallet force, using tuptodynamometer.

Signed: C. R. TAYLOR, Streator, *Executive Committee.*

J. E. HINKINS, Chicago, *Supervisor of Clinics.*



HENRY J. B. McKELLOPS, D. D. S.

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ORIGINAL COMMUNICATIONS.

THE OUTLOOK IN DENTAL EDUCATION.*

BY EDWARD C. KIRK, D. D. S., PHILADELPHIA, PA.

I once derived much pleasure and intellectual profit from reading John Fiske's essay entitled "The Destiny of Man Viewed in the Light of His Origin," and not the least source of interest which the work contained was the principle suggested in its title that man's destiny may in some measure be deduced from the study of his origin. The evolutional method in studying man's development is as applicable to his social and economic growth as it is to his physical development, and it has seemed to me that in the light of the principle here referred to we might gain a clearer insight into the conditions which have determined the course of our professional development and a hint at least of its probable result. Or to paraphrase the title of Professor Fiske's book, we propose to inquire as to the Destiny of Dentistry Viewed in the Light of Its Origin.

Time will not permit us to make a detailed study of the origins of dentistry and assuming that you are all more or less familiar with the details of its earlier history it will suffice to remind you that in all probability the treatment of diseases of the mouth and teeth is of as great antiquity as is the treatment of any other portion of the human body. It cannot be doubted that since man had teeth he has sought relief from the pain and discomfort resulting from their injury by disease or accident and that efforts at dental treatment were called into existence in response to this demand for relief.

It may be further accepted that the earlier practitioners of medical art were the ones from whom the relief from dental suffering was first sought, so that in its beginnings dentistry was an integral part of medicine, and as a matter of fact was so regarded until comparatively recent times.

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*Read before the Chicago Dental Society.

It is of importance at this point to understand the conditions of medical art at the time when its earliest historical records may be regarded as authentic. The superstitions of the early Egyptians, Hindoos and Greeks led them to regard diseases and accidental bodily injuries as an expression of the anger or disapproval of their several deities, hence sufferers from the displeasure of the gods naturally resorted for relief to the priests, whose object in diagnosis was the discovery of the nature of the ghostly offense and whose therapeutics consisted in certain mysterious propitiatory rites which were believed to effect a cure by the indirect method of appeasing the anger of the offended deity. To the purely propitiatory method of healing were gradually added a variety of therapeutic measures involving the application and administration of drugs, all of which practice was carried out under the directing force of the central idea that disease was the result of divine anger and that to effect its cure the gods must be appeased as a *sine qua non*.

The effect of this dominating idea on the public mind as well as upon the priesthood was stupendous in the power which it conferred upon the priesthood over the souls and bodies of the people and as a consequence developing the superstitious and reverential awe with which the physician was regarded, a popular attitude of mind maintained for a long period even after the separation of the physician from this priestly connection was complete. It would perhaps be too much to suggest that the present status of the physician is in any appreciable degree the inherited result of his ancient priestly association or that his original attitude of control over the souls as well as over the bodies of men has its reflex in the public estimation of his importance, but it is certainly true that the direct bearing which his ministrations have upon the issues of life and death justly give him a position of commanding importance in human society.

It will be readily seen that the public demand for the relief of its bodily infirmities has been the creative force which served to stimulate the development of medical art and science in all its branches. How nobly and persistently and at what tremendous labor and self-sacrifice the attempt has been made to meet this demand is generally understood and appreciated. The study of the human body, its structure, function, pathology and therapeusis has steadily progressed until from out the ages of ignorance, mysticism and superstition there has grown a magnificent science of medicine and systems for the rational cure of disease. Its votaries have cultivated all departments of their art until the sum total of medical knowledge has become so extensive as to have long since passed beyond the intellectual grasp of a single mind, and the resulting art has become correspondingly elaborated beyond the ability of any individual to efficiently and intelligently practice it, hence the development of specialties in medicine, its division into limited fields, each of such moderate extent as to be within the bounds of individual comprehension and practice.

What, we may now ask, is the position of that special department of medical science, embracing the structure, function and therapeutics of the mouth and its contained organs, together with their surgical and prosthetic treatment which we call dentistry?

We find by a study of its history that dentistry, as has been stated, was at one time a recognized part of medical art, but in the course of time its development as a distinct specialty came about, leading finally to separate sources of education, and within recent times to its being regarded by a considerable number of its practitioners and educators as a profession distinct from and independent of general medicine.

The causes of this separation of the dental specialty from the parent medical stem are not far to seek. So long as the relief of dental troubles involved nothing more than the therapeutic administration of drugs or their topical application and especially during the period of priestly relationship of medicine, the physician was as well able to cope with dental disorders as he was with those of any other part of the human body, but a demand for another and totally different kind of dental treatment arose, viz., the restorative or prosthetic, involving a mechanic art with which the physician was not familiar nor was he in sympathy, and as a consequence he was unable nor did he desire to meet the demand upon him for this character of service, a kind of work which he regarded not only as apart from his calling but beneath his dignity, as a department of artisanship rather than of professionalism.

The inevitable tendency of a demand to create its sources of adequate supply made itself felt in respect to the demand for restorative dental operations. What the suffering public could not obtain from the physician they sought and obtained from the artisan, and the business of making and fitting artificial teeth was grafted upon that of the jeweler and goldsmith. In an age when social class distinctions were drawn in Europe much more rigidly than now and when the trades guilds were sources of power potent enough to create their own laws without state interference, the lines limiting the spheres of activity of the several trades and professions were rigidly drawn.

The physician, the surgeon, the apothecary, dare not trespass upon the prescribed territory allotted to each by law, hence arose jealousies and claims of class superiority which tended to widen the breach between the dental surgeon or physician who lacked knowledge and skill in dental mechanics, and the dental mechanic who was practically devoid of anatomical and pathological knowledge of the mouth and teeth.

Intermediate between these two classes was the barber-surgeon dentist, who added to his tonsorial practice the art of blood-letting and tooth-drawing.

The dental artisan in the aggregate may properly be regarded as a center of dental professional evolution, for those of the more progressive class, realizing their deficiencies in the anatomical and pathological knowledge requisite for the intelligent treatment of their patrons, added by degrees to their mental equipment the study of those branches of the then existing medical art and science which were directly applicable to their practical needs. Coincidently with this improvement upon the part of the dental artisan came a better patronage by the public and a corresponding neglect of dental practice by the surgeon and medical practitioner until about the year 1700 as stated by Pierre Fauchard, who has with much propriety been called "the father of modern dentistry." "The most celebrated surgeons having abandoned this branch of surgery, or having but little cultivated it, their negligence gave rise to a class of persons who without theoretic knowledge or experience and without being qualified, practiced it at hazard, having neither principles nor system." This would seem to mark the transitional stage, in France at least, when dentistry as an integral and original part of medical science and art was passing or had about passed over into the hands of a class of practitioners who had developed their art quite outside the medical relationship and from sources distinctly of the artisan order. Like all transitional periods in social development the one under consideration was characterized by lack of harmony, order and method as shown by the foregoing statement quoted from Fauchard, who, writing in 1728, further says: "It was only since the year 1700 that the intelligent in Paris opened their eyes to these abuses. When it was provided that those who intended practicing dental surgery should submit to an examination by men learned in all the branches of medical science, who should decide upon their merits," an act interesting in itself as being the first attempt at state control of dental qualifications as a public health measure.

It was about this period in France that dental art reached a very high state of development, and it was this art which was implanted upon American soil by the Chevalier Lemaire in 1782.

I have dwelt upon the historical origins of dentistry at some length because it is I find the prevalent idea that the period when dentistry took its departure from general medicine was at the time of the founding of the Baltimore College of Dental Surgery in 1839 and was due to the failure of those interested in the creation of that institution to bring about an educational affiliation with one of the then existing medical schools for the purpose of educating men for the practice of dentistry.

The causes of the separation were active many years, even centuries previously, and, in my judgment, are to be found in the inability and unwillingness of the physician to meet the demand for prosthetic dental treatment as already related.

That the effect of the original medical and dental relationship as members of a single professional body has actively survived throughout the whole period of separation is evident to anyone capable of interpreting the meaning of historical data. That the survival of this idea of relationship is pregnant with significance I shall hope to make clear to you, for that, indeed, has been the motive of this communication and the basis upon which I shall venture to prognosticate something of the Outlook in Dental Education.

We have seen that the dental artisan was of necessity obliged to attain a knowledge of the materials, the tissues and organs embraced within the field of his activities. The constantly enlarging sphere of his requirements for knowledge was met by the creation of institutions devoted to furnishing the needed instruction and to his schools of instruction were added the dental association and a standard and periodical literature. The curriculum of studies beside those dealing directly with technical dental art, have gradually included the branches of medical science until to-day practically every branch of medical science which may fairly be regarded as fundamental to the study of general medicine has become a recognized feature of the standard curriculum of dental study.

The practical declaration of dental independence which had its embodiment in the establishment of the Baltimore College of Dental Surgery in 1839 was a radical step that had by no means the unanimous support of the educated practitioners of dentistry at that period. Many dentists holding the medical degree and believing in the essential unity of dentistry and medicine were unwilling to give in their allegiance to the new educational scheme and still adhered to the principle that dentistry should be taught and practiced as a medical specialty. These represented a survival of the ancient idea and were a class of medical men who, in addition to their scientific medical training, possessed an aptitude for mechanic art. As compared with the whole body of dental practitioners they, however, formed a minor proportion. Prominent in this class was Gardette, of Philadelphia, who publicly and vehemently opposed the plan for a separate educational system for dentists and published a scheme for a dental curriculum to be carried out in medical colleges by the addition of chairs of instruction in dentistry to the regular medical course. His plan found few supporters and was abandoned for the time; the success of the dental colleges continued to increase, bringing with it in time the formal separation of dentistry and medicine which was expressed by a resolution presented by Dr. Wood, of Philadelphia, before the American Medical Association at its Charleston meeting, in 1851, to the effect "that colleges exclusively of dentistry and pharmacy are not recognized by the association, as among the bodies authorized to send delegates to its meetings."

But notwithstanding the temporary suppression of the principle expressed in Gardette's plan of dental education we are all aware that it has never been wholly extinguished. The engrafting of dental instruction upon the medical curriculum is an accomplished fact in numbers of medical schools and is one of the recognized methods of modern dental education, although in America it has never been carried into practical effect by any school to the extent of making the medical degree a prerequisite for dental practice. In Belgium, Italy, Austria and some other European countries the attainment of the medical degree is required by law before license to practice dentistry is issued.

It will be seen, then, in a study of the evolution of dental education that its two lines of descent, while for a time widely separated as to the fundamental principle, have in their practical operation been steadily converging on the one hand by the steady addition of medical branches to the curriculum of segregated schools of dentistry and on the other by the tendency of medical schools to take under their supervision the education of students as dental specialists in medicine.

Bearing in mind the fact already stated that the education of the dentist to-day demands his instruction and thorough training in practically all of the branches which are recognized as fundamental to the study of medicine in any or all of its branches let us consider the condition of medical education as we find it to-day in this country. Has the educational system in medicine kept pace with the increase of medical knowledge? One has only to consider the elaborate extent to which the recognized specialties of medicine have been developed by scientific research and the rapidity with which this extension is progressing to realize that the present curriculum in medicine, both as to length and content, is wholly inadequate to prepare any individual for the intelligent and skillful practice of more than a single medical specialty. That this fact is practically recognized is demonstrated by the necessity for extended periods of special post-graduate study by medical men in order that they may fit themselves for the pursuit of their life work and successfully compete with those who have previously had the advantage of similar post-graduate training. Not only the medical graduate but the public have come to recognize the necessity for post-graduate training before the student may be considered a safe and trustworthy practitioner.

It is questionable whether American medical schools with their present limitations of curriculum attempt to do more than to send forth their graduates with a fairly thorough training in the fundamental branches with a smattering of special lines of medical study added. Conservative estimates place the minimum time in which even a fair knowledge of the various special departments of medicine could be obtained at from twenty to twenty-five years of continuous study. Nevertheless, at the end of a four years' course of study the successful student of medicine is granted a degree which empowers him to practice any or all of the medical specialties exclusive of dentistry and in some States even including dentistry. The training of the dental student under the present standard curriculum is accomplished in three years and involves his training in practically all of the subjects which constitute the foundations of medical training, by which I mean that he is educated in very nearly all of the elementary branches upon which the science of medicine is based. The demand is urgently made among those who are in favor of a broader and more thorough education for the dentist, that the time of the course be extended by the addition of another year. The probability is that the more progressive dental schools will adopt the added year in the near future, when it will certainly follow that among other improvements which the increased time will afford will be more thorough and broader training in the medical branches of the curriculum. We seem to be upon the verge of a somewhat anomalous situation with respect to dental and medical education.

Unless in the near future certain radical changes are made in the system of medical education the growth of the standard dental curriculum will present us with the spectacle of one of the medical specialties requiring an amount and length of training equal to that now given to those who are fitting themselves and who are empowered thereby to practice over the whole field of medical science and art.

Can anyone believe that in point of thoroughness and adequacy with respect to its objective ends the training represented by the M. D. degree can bear comparison with that represented by the D. D. S.? The time has arrived for those who demand medical training for the dentist to realize that in our best schools the dentist is medically trained now, if not to an ideal degree at least to an extent closely approximating it, and the future will bring about such additions to the dental curriculum as will fill out to the fullest measure the need for medical training by the dentist. There is a vast difference between medical training or medical education for the dentist and a medical degree for the dentist. The medical degree is the hall mark which a medical college places upon those who have successfully passed examinations upon the subjects of a specified curriculum. Whether all of the subjects of the medical curriculum are necessary to the making of an intelligent and skillful practitioner of dentistry is highly questionable. In these modern days of intense activity and competition the economy of time and energy is of paramount importance. Education must be directed with reference to its object, that of creating the highest efficiency in the individual. Education as an intellectual adornment has become secondary to its usefulness as a source of power. Let our first consideration in dental education then be the making of good dentists and in so far as medical knowledge will help us to that end let us have medical knowledge, but not necessarily the medical knowledge represented by the medical degree.

In 1874 the editor of the Philadelphia *Medical Times*, issue of May 16th, said in an editorial on "Dentistry:" "The dental colleges have been a great aid to the dental profession and, indeed, whatever claim dentistry really has to be called a profession rests almost exclusively upon their labors. Yet they are an insuperable barrier to its ever becoming a medical specialty, and the degree of D. D. S. is the badge of a partial culture which must shut out from the medical ranks every one who wears no other insignia. So long as the dental profession by their deeds say that such half culture is all that is necessary for the dentist why should the members complain if the world and the *Times* agree with them and assign to dentistry the position which it at present holds?"

It is fair to state in this connection that in the same journal the editor in writing of his own, the medical, profession puts some of its defects in terms of equal severity. He asks "How can a profession be honored that sells its birthright for a mess of pottage? How can any body of men be distinguished as a whole when a few hundred dollars and a few months' work give admission to the ranks? It is hard to tell whether to laugh or cry over the solemn farces of commencement day; but surely the spectacle of grave critics searching assiduously for the causes of the profession's low estate when the mud of the quagmire is upon their very persons, is most laughable."

But this occurred twenty-six years ago and the world has in the meantime moved and while the glamour of the M. D. degree still holds attractions for many who, realizing the hiatus between its pretensions and the actual educational avoirdupois which it represents, still covet the power which it conveys, the great majority who constitute the dental profession have ceased clamoring for recognition by the medical profession. The broadening of educational requirements in dentistry has brought with it an increasing self-respect; instead of demanding medical recognition they are recognizing themselves and are being recognized by the public whom they serve.

If twenty-six years ago the degree D. D. S. was the badge of a partial culture it is not so to-day. In view of the thoroughness with which the modern dental curriculum both by its length and content fits the student for the attainment of a dental degree representing but one department of medical science and art, and the inadequacy of the medical curriculum to compass the training of a graduate to practice all that his degree represents, we may well ask which is the badge of a partial culture, the D. D. S. or the M. D. degree?

The imperfections of the present system of medical education are being realized by those who are willing to view the subject without prejudice and apart from the traditions of the past three centuries. There is no good reason why medical instruction should not be brought into line with the methods of instruction pursued in other and allied departments of human inquiry and on general principles be treated as a subdivision of biology.

At a meeting of the Medical Alumni Association of Harvard in June, 1875, President Eliot said, "No department of the university can be adequately extended and improved under such a restriction as that it shall teach no more than a fair student can learn in four years. I believe that the instruction now given at Harvard College, for example, is more than a good student could take in sixty consecutive years if he devoted himself exclusively to following the course in the college. The amplitude of instruction bears no relation to a single student's capacity of absorption in four years. Just so it ought to be in a university medical school. There should be an extended instruction far beyond the limits of any one student's capacity. This involves, of course, an optional or elective system within the school itself whereby the individual student should take what is for him the best four years' work and the faculty supplying an amount of teaching which it would take a single student eight, twelve or twenty years to pursue. We must escape at our medical school from this limitation of instruction to a prescribed curriculum suitable for any one student who follows it four years."

We have in this statement, it seems to me, not only a frank and square recognition of the inadequacy of the present medical curriculum to fit a student for all that his degree represents, but a rational suggestion for readjustment of medical instruction upon a logical and scientific basis. A course of medical education embodying the elective idea and the extension of the instruction limited only by the existing status of the science and art would necessarily include as its foundation a thorough training in all branches upon which medicine in its entirety is based—the completion of the fundamental course should be a prerequisite to the taking up of the electives which relate to the special field of practice chosen by the student and the medical degree should be given at the termination of any of the groups of electives. Whether it would be advisable to grant a Bachelor's degree at the completion of the general elementary course is a matter of detail, but the plan of granting a Bachelor's and then a Master's degree as in arts and letters is quite applicable in principle, at least, to medical education, if treated in accordance with President Eliot's suggestion.

Under such a system dental education would take its normal place as a department of the great healing art. Its educational system and its curriculum of study have gradually and in the process of time fitted it for this relation. Dentistry is ready and when our aged medical parent shakes the dust of antiquity from her educational methods and reorganizes her professional household for the adequate accommodation of her growing family of specialties, let us hope that she will awaken to the fact that that one, even though a wanderer in youth and later disowned, which has in its keeping the portal of the "house beautiful" over which she has in all other respects exercised her beneficent sway, comes back to her alma mater lusty and full grown and that she will recognize its birthright to a place in her family circle.

NORMAL OCCLUSION AS A BASIC PRINCIPLE IN ORTHODONTIA.*

By Thos. B. Mercer, D. D. S., Minneapolis, Minn.

What is generally conceded to be the highest type of dental art is that which follows to the closest, yet most consistent degree, the ideal lines of nature.

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*Read before the Minnesota State Dental Society.

It seems necessary to add the word consistent to the foregoing because of the ease with which general harmony of feature and expression is lost sight of. In strict speech, Art is but a copy of Nature with a human sense imbued, and this "human sense" might perhaps be safely defined in dentistry as "consistency."

The employment of normal or ideal occlusion of the teeth as a basic principle in Orthodontia, then, would seem the most commendable as well as the most happy soil to cast upon; both as a means of diagnosis and as a guide to ultimate purpose.

This most vital subject is by no means new. Its value has been recognized and its teachings advocated for a considerable length of time; but until very recently it has always been treated with a certain vagueness and indecision, as though it was a matter to herald in theory but slyly avoid in practice. The literature in this direction, outside of Dr. Edward H. Angle's writings, is surprisingly barren and insufficient. A careful search reveals but casual comment upon it; and this usually confined to the advisability, perhaps, of keeping in mind the relation of the teeth. In no case was the absolute necessity of it advocated.

One is sometimes led to wonder at the unsteadfast footing of much of the literature in this science generally, and at the surprising extent to which it seems to find tolerance. A possible explanation of this phenomenon lies in the fact that we have been unable to shake off the traditions and principles handed down from the so-called fathers in this work. Instead of starting off with a clean slate, we have been hampered by a foundation of questionable knowledge and based all later deductions from this standpoint. The result has been that the literary output has fairly bristled with appliances and devices of a fearful and wonderful cast; while the question of etiology or remote or immediate relationship to neighboring pathological conditions by genuine research, has scarcely received the cold respect of a passing thought. The scheme of all medical science, as I understand it, has ever been to treat an effect by way of the cause. The end-of-the-century surgeon, for instance, does not wait for a wound to become infected and then treat it. No! Research has taught him what brings about infection and he anticipates it with proper measures. The general orthopedic surgeon when called upon to treat a deformed joint does not consider the question of appliances, but at once sets about to determine the cause. He wishes to know if inflammation is present; if so, is it acute or chronic, or is the deformity the result of tuberculosis, syphilis or what not?

The most enthusiastic orthodontist cannot hope yet a while to anticipate an oral deformity and treat accordingly, nor can he from the presence of a specific disease find a basis for rational treatment, but he *can* find an almost infinite field for research, that he may understandingly cope with what is already at hand.

What is wanted is some one who will give us (1) the structure and composition of secondary deposit of bone in the alveolar process after tooth movement, and how it differs from the primary condition, (2) more in regard to the possible connection between deflection of the nasal septum and high vault, (3) the influence a chronic catarrhal condition of the nasal tract in childhood might have upon development in its immediate neighborhood, (4) more certain knowledge and less speculation as to the usual accompaniment of narrowed arch and protruding incisors in mouth breathing, (5) a better insight into the effect the ills of childhood have upon the formation of the permanent teeth, also the extent of this influence upon arrest in the development of either jaw, (6) something in research work on the much mooted question of the transmission of irregularities of the teeth, (7) more concise information on arrest in the development of either jaw by going deeper than attributing it to degeneracy. There is certainly a physiological principle involved in degeneracy. And so one might continue at great length.

It is perhaps true that appliances in orthodontia require much more intelligent consideration than those employed in other branches of orthopedic surgery, yet they cannot but be regarded as of secondary importance.

The points just enumerated may be taken in a small way as a plea for higher requirements in dental education. Those of us who have attempted research work on paths more or less unbeaten can well appreciate the embarrassment experienced purely from lack of fundamental knowledge. I am perfectly free to say that I worked over two months last winter on a couple of "sticking places" that were cleared up wonderfully by studying up on Embryology and Biology.

A profession, like a nation, never stands still. It is either progressing or retrogressing. Knowledge with understanding is the best incentive to progress and attainment. If we as a profession are to be recognized as a specialty in medicine, it will not come through sitting quietly by and bidding for or writing about it, but will come through sober attainment and nothing else, and then will be upon us uninvited.

But to return. The tendency has been, and to a great extent is still, to consider an irregular condition of the teeth as confined to the upper jaw alone.* Dr. Talbot, in an unguarded moment, I feel sure, says, "It is a singular fact that the greater number of irregularities of the teeth occur upon the upper jaw; when they are found upon the lower, the irregularities are due to local causes." As another instance, how many of us can call to mind any literature on Orthodontia (and we must measure the status of any profession by its literature), either in the current journals or in accepted text-books in which the authors (with two exceptions) have given us half-tone reproductions of the actual models where the occlusal relation of both arches is shown? Very few of us indeed. In fact, we seldom do better than to get wood-cut engravings of the upper arch alone, and even then, I am told, that these engravers are such good fellows that they will readily transfer a third molar to the space usually occupied by a central incisor for a good cigar.

Why should this be, when by all the laws of mechanics, where there is a bunching and overlapping of the upper teeth, there must necessarily be a corresponding deformity below, and also where it is reasonably certain that the deformity in the upper jaw was *caused* by some interference with the normal eruptive process in the lower? The upper teeth in adapting themselves to the conditions form a corresponding break in the arch line, though not necessarily in the same place. In this connection,† Dr. Calvin S. Case says, "And again, if both upper and lower models were studied in occlusion and the *irregularity of the lower arch was, as is usually the case, in correspondence with that of the upper* * * *, etc."

Treatment of the upper jaw, without considering the lower, cannot possibly be permanent because there is at once represented an unequal distribution of the forces controlling occlusion.

What is normal occlusion and why should it be considered a basic principle in orthodontia?

Normal occlusion is the normal contact and correct relation of the teeth in the dental arches when the jaws are closed.

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*The Etiology of Osseous Deformities of the Head, Face, Jaws and Teeth.

†The American Text-book of Operative Dentistry.

Normal occlusion serves a two-fold purpose. It is firstly a guide to us in the reduction of a case of malocclusion and is the only means at hand by which we may hope to gain honest results. If this very hinging point in the operation is ignored, we will certainly inflict a jumbling of the teeth and general inharmony in the occlusal relations of the same. This condition can but result in faulty trituration and mastication of food with its attending evils, faulty enunciation, abnormality of facial lines, and, in extreme cases, much discomfort to the patient.

The foregoing would scarcely apply to a case in which the simple inlocking of an incisor was involved.

Normal occlusion secondly suggests a means of diagnosis by noting variation from the same.

It becomes at once apparent then that a haphazard knowledge of the relation one cusp bears to its fellow will not suffice. We must have a positive knowledge. We must know, for instance, that the mesial slope of the mesio-buccal cusp of an upper first molar occludes with the distal slope of the mesio-buccal cusp of a lower first molar, or that the distal slope of the buccal cusp of a lower first bicuspid occludes with the mesial slope of the buccal cusp of an upper first bicuspid.

A fixed notion of normal occlusion, then, enables us to determine variation from it and the extent of the same; but this is not all. Dr. Edward H. Angle has reduced every possible case that is to be met with into three distinct classes, with divisions and subdivisions, so that we are enabled also to recognize distinct characteristics in every case.

This cannot but be regarded as a great step in advance, for it lifts us out of a Sahara of confusion into the broad light of an almost unassailable classification.

If through this classification we are enabled to recognize distinct characteristics in each case, it supplies a reliable basis for the collection of data relative to this particular class. It admits of a close study of the kinship existing between the various classes, divisions and subdivisions, and, all in all, stands for rational and intelligent deduction.

Briefly let me outline these classes:

Class 1—Relative position of the jaws mesio distally normal with first molar is usually in normal occlusion, though one or more may be in buccal or lingual occlusion.

Class 2—Characterized by distal occlusion and usually accompanied by retrusion of the lower jaw.

Division 1—High vault, lengthened and protruding incisors, lack of nasal and lip function, mouth breathers.

Subdivision—Same as division 1 with the exception of unilateral distal instead of bilateral occlusion mouth breathers.

Division 2—Bunching and overlapping of incisors with lingual inclination, normal lip function, normal breathers.

Subdivision—Same as division 2, with the exception of unilateral distal instead of bilateral occlusion, normal lip function, normal breathers.

Class 3—Characterized by mesio occlusion.

Division 1—Protrusion of lower jaw with mesial occlusion of lower teeth. Lower incisors and cuspids inclined lingually.

Division 2—Same as Division 1, except unilateral mesial instead of bilateral mesial occlusion.

Subdivision mesial occlusion on one side, distal on the other.

There we have every possible case to be met with. A careful and searching study of it is recommended.

The consideration of normal occlusion as a basic principle in orthodontia would be incomplete without reference to the plaster impression. It will be found impossible to apply any of the schemes herewith suggested without the use of plaster as an impression material. The factor that controls occlusion is the occlusal planes. If we make use of a material that drags or becomes in any way distorted, the result is an untruthful representation of the case. Plaster is absolute, but the manipulation of it is proportionately more difficult. Any stumbling block, however, that can be overcome by a persistent effort cannot, of course, be taken seriously. I am not sure but what the casts of the cases you have already seen illustrate the possibilities of this medium to a degree.

We have Rosalind's word for it that "good wine needs no bush," and I am sure all of us heartily agree with her, but primarily we must have some proof that the wine is in reality *good*. Why not each one taste it? In this particular wine that I refer to, it will be disappointing to find a single total abstainer. What is hoped for is not only to induce a taste but to establish a thirst for it. This done, and I am certain that our next meeting will result in furnishing me a host of fellow topers.

A SYSTEM OF RETAINING SPRINGS FOR PARTIAL PLATES AND REMOVABLE BRIDGES.

By W. E. Griswold, D. D. S., Denver, Colorado.

Some four years ago you published, in the report of clinics given at the thirty-third meeting of the Chicago Dental Society, an illustrated description of a removable crown made by me for the support of saddle bridges. This crown was the outcome of some years of study and experiment, but in practice was not satisfactory because the metal of which the spring was made was not sufficiently elastic after heating to hold the denture firmly in place, and I realized I must first produce some combination of precious metals which would stand the action of the oral secretions, stand a heat sufficient to flow high karat solders and still be highly elastic. This we finally accomplished, and the springs, which are the substance of this article, are made of this metal, which will stand the action of boiling sulphuric, nitric or hydrochloric acid, stand a heat sufficient to flow 22 karat gold, and still be highly elastic, and in use has developed this peculiarity, that the longer it is used, the more often a denture is taken off and replaced, the more elastic it becomes.

As presented to your notice, these springs are punched out of this metal and, by a series of steel dies, gradually brought to the form you see them, and are all of a uniform gauge and the capsule made to compress them to just the right degree to hold anything you wish to put on them firmly.

I will first describe that portion of the system which necessitates the amputation of crowns of teeth, and first my method of capping a root, illustrated in plate A.

The root is beveled as usual, a thin strip of platinum tightened and burnished to it, as at Fig. 1, the joint soldered with 20% platina solder or pure gold, this placed on a thin piece of platina plate, as at 2, the inside of the band painted with whiting and soldered with the same karat solder. This is trimmed down, as at 3, and flushed as at 4. This is replaced on the root, the previously fitted pin driven through the thin plate on the end, the two removed and heavily soldered and filed smooth. This gives a little larger surface on which to work, and yet not much, if any, larger than the parts removed by trimming. To this I simply add the spring

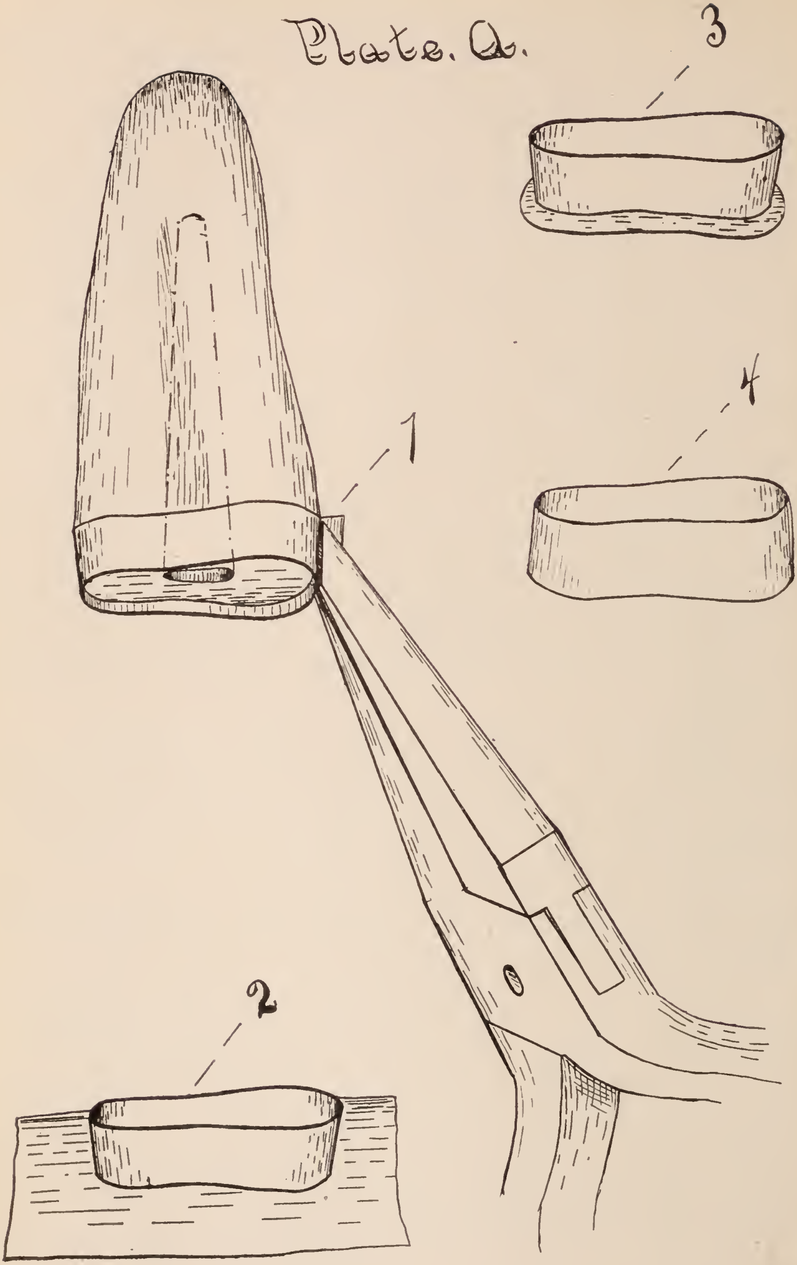


Plate. A.

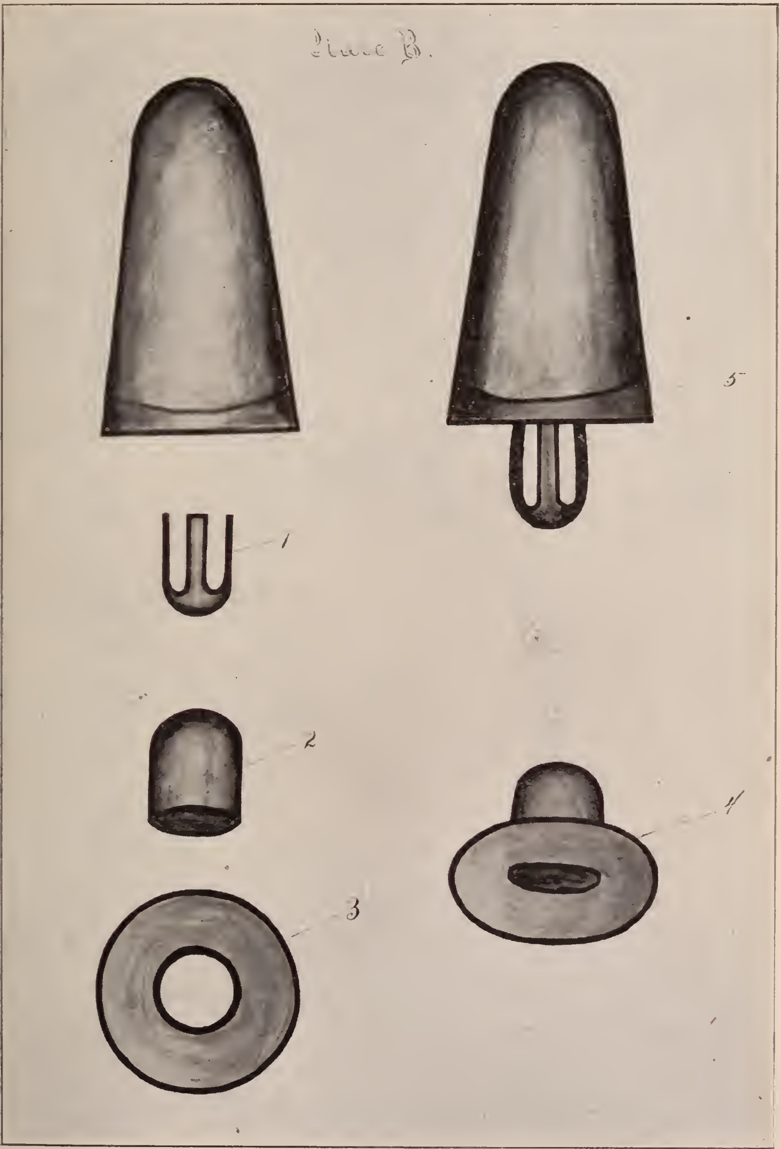


Plate B.

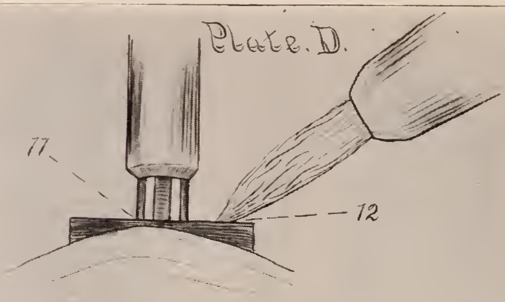


Plate. D.

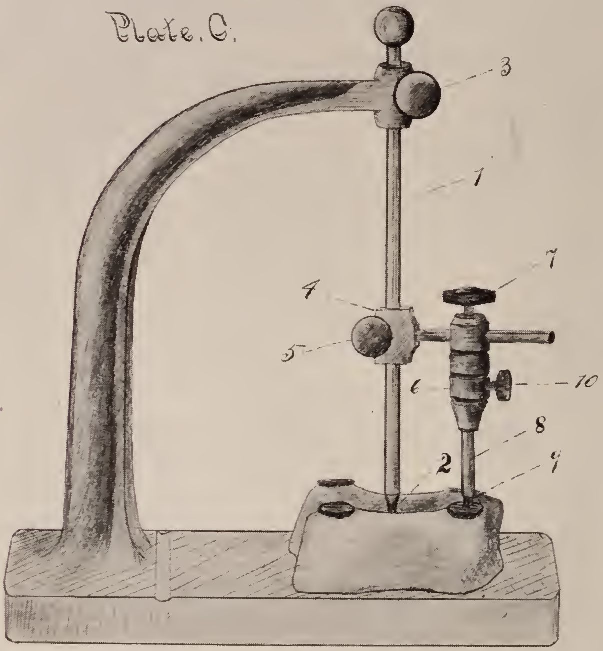
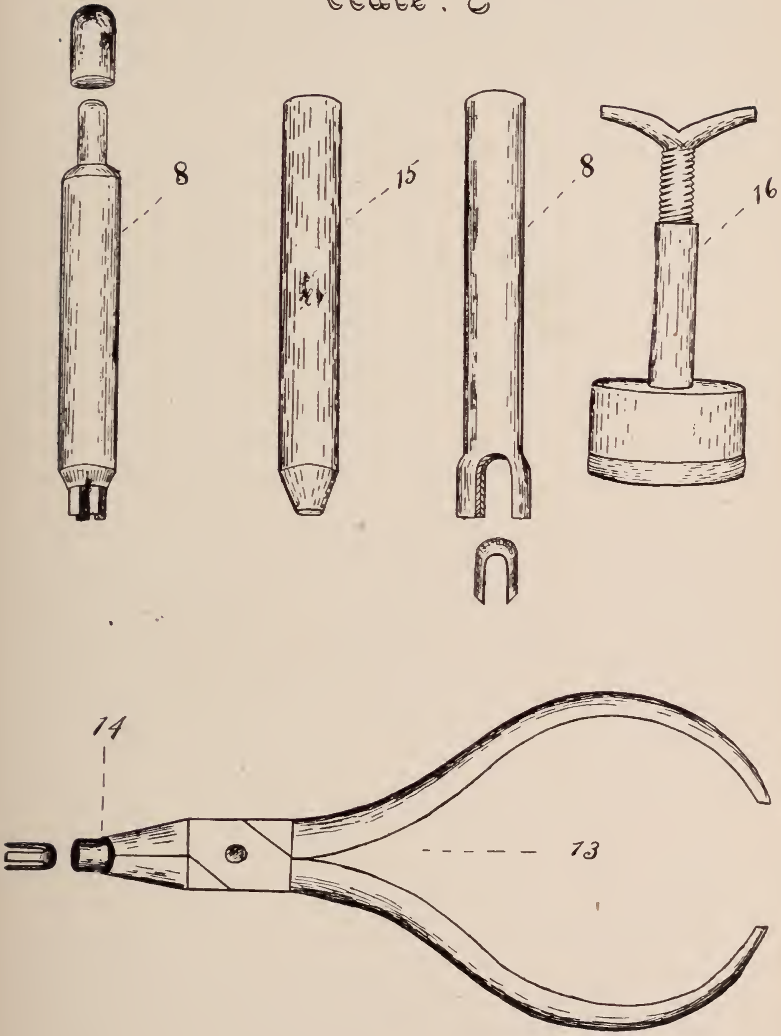


Plate. C.

Plate. E



stud shown at 1, Plate B, and cover this with the capsule 2, carrying over it a piece of plate 3 and joining 2 and 3, as at 4, making what I call my crown plate, on which all superstructure is placed.

In practical work, after capping each abutment, we take an impression and bite at same time in wax, and place on an articulator. This is merely for reference, a means whereby we can ascertain the position on the root cap to solder the spring stud, so it will not interfere with placing a facing in front of it, also determine the size to use and the length we can have it and not interfere with the occluding teeth. We now take an impression of the capped roots and edentulous parts. If caps have not come away with the impression, remove and place in their respective places. Before pouring model cover the inside of caps and the surface of the pins with a film of wax. When the model is made (and preferably of sump or some nonshrinking compound) shave it perfectly smooth and level on the bottom and if for any reason you want your bridge to go in on one side the heel or toe first, shave it so it will tip a little that way. Now warm the caps enough to melt the wax and remove them from the model, and after melting out all wax, replace them.

We now take the soldering jig, Plate C, warm its base and put a sheet of thin wax over it and press the model into this softened wax and fasten with centering pin No. 1, clamping with nut 3. By observing model on the articulator you determine where on these root caps you can best place the stud to not interfere with the bite and also allow a facing to go in front of it, also the length you can trim it and the size to use. Take this stud and hold over a Bunsen burner until it is a dull red, but do not throw in water to cool, as it makes it stiff again and brittle. Place it in the open end of soldering chuck 8, Plate E, this chuck in jig chuck 6, fasten with nut 10, bring it to the position you wish it to occupy on root cap, observe the angle to which it must be filed to fit accurately; loosen nut 7 and remove all these parts and using them as a holder with a fine cut gold file, cut to the desired angle; replace, tighten nut 7, see that 8 is in line with centering pin and tighten all nuts; flux, place a bit of solder inside the spring and solder as at D with the pointed flame held on the root cap until solder has flowed down and united all together. Now loosen nut 5, raise up arm 4, which brings the root cap with it; loosen nut 10, take out chuck 8, remove the spring and root cap, see that the two are firmly united;

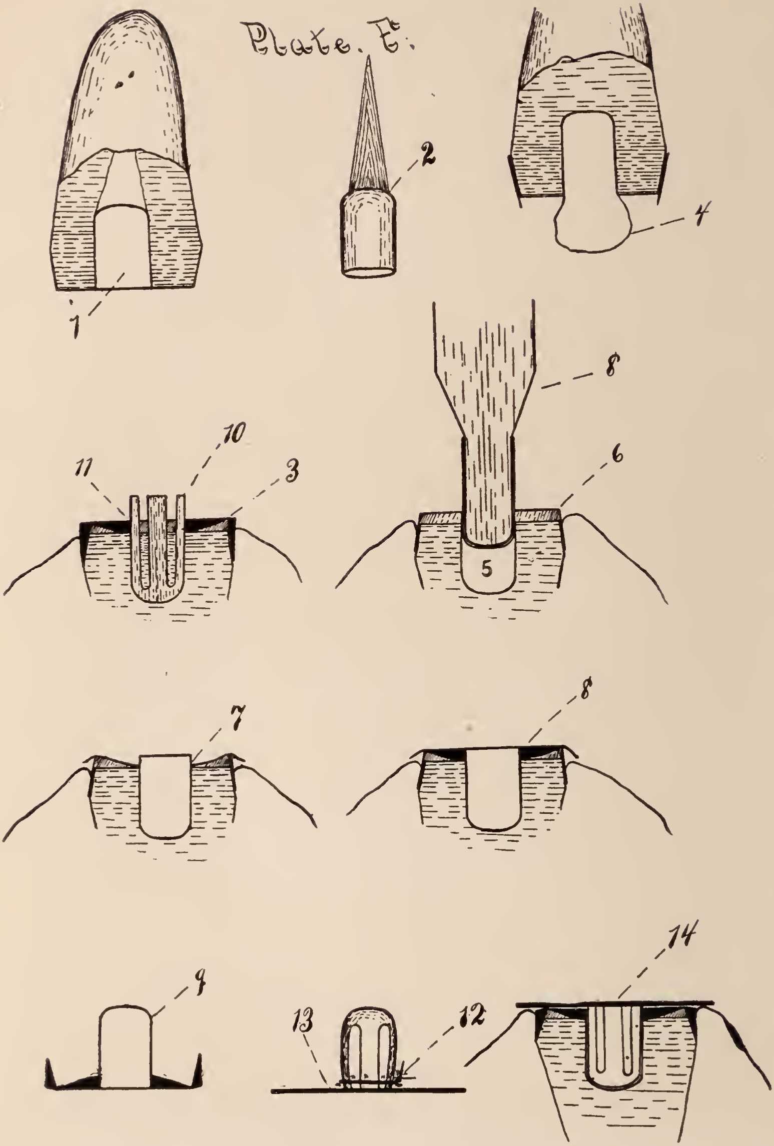
if not, hold in a pair of pliers and complete the soldering so the parts are all solid. Now place the pin in a vise, so the cap rests on the jaws. Take the special pliers, No. 13, Plate E, place the capsule as at 14, carry this over stud, observe angle it must be filed to, to fit the root cap, remove and so file it, replace, take special punch 15 for the size capsule used, punch, in a piece of plate large enough to cover root cap and extend over it on the side the saddle covers, a hole which just fits over the capsule; carry to position, adapt to surface of root cap, wax the capsule and this plate together, remove and solder heavy, replace, then thoroughly adapt the crown plate to the root cap, so nothing can get between them. If this is a bit loose, don't worry, it is all the better, as it facilitates easy working and you can tighten when work is all complete in the mouth by a very slight tap on the end.

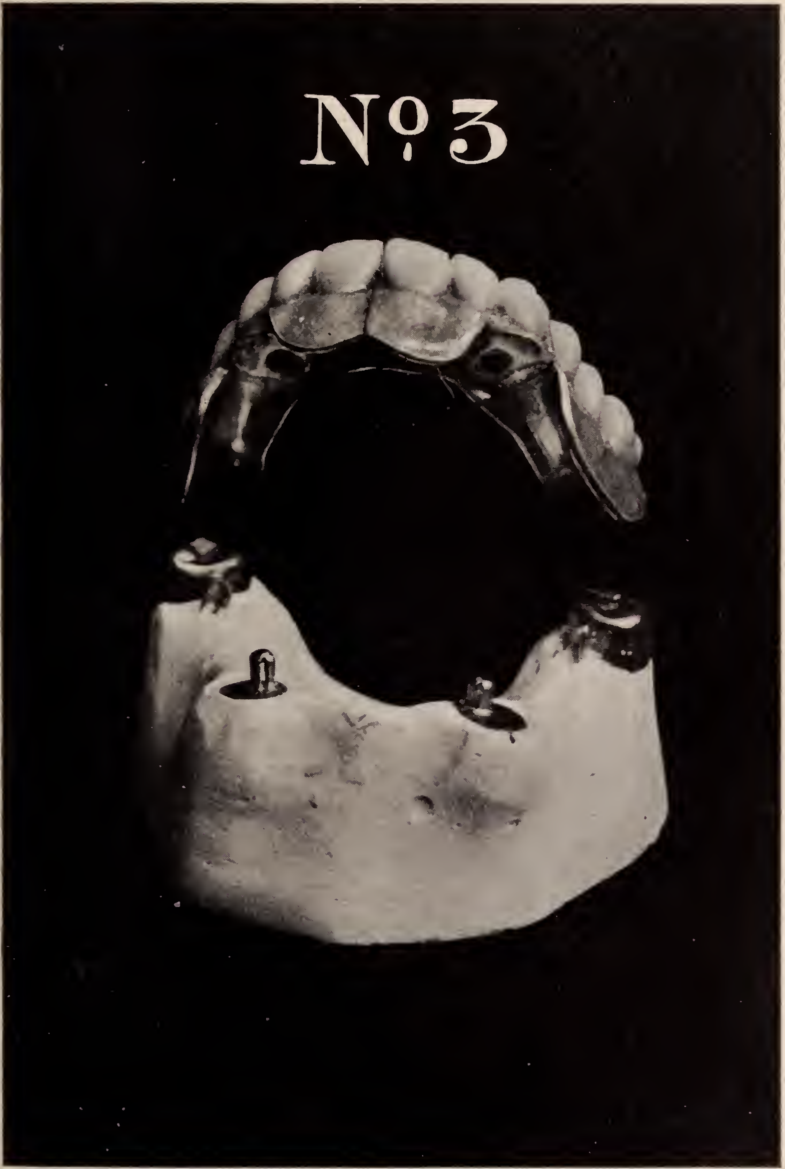
Proceed with each abutment in the same way. When complete, pull off the crown caps, replace each root cap with its spring stud on the roots in the mouth. If you use a saddle (this being previously made), place in position, replace the crown caps and they, extending over the root cap on side next the saddle, hold it in position. Now take a bite. Then a suitable cup, punch a hole in the bottom corresponding to shank of impression prop 16, place cup and prop in the mouth, see that it forces the saddle where you want it when patient bites on the rubber cushion. Now fill your cup with plaster (slow setting), carry to position, have patient bite forcibly on the prop, which forces your saddle into the soft tissues with exactly the same pressure they will exert in subsequent use, force up your tray and get an impression of all the parts in this, their true relation when in use. When hard, pull out the root caps and lay aside for polishing, place a match, or some piece of wood in the crown caps so it will extend well into the model.

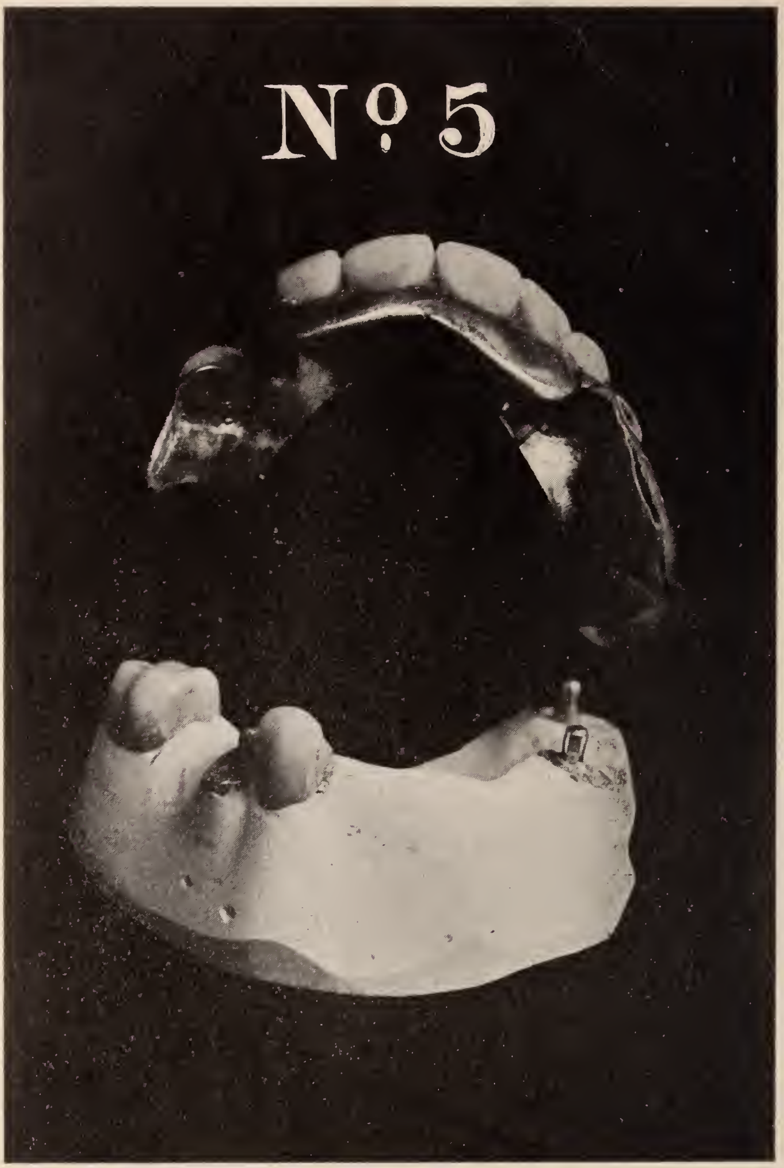
Now make a model and set up on articulator with the bite, take a bite of sump, or some nonshrinkable substance, and build up on this model over crown caps and saddle, enough so you can grasp and remove them all, and solder all together, replace on model and finish in any way desired.

If we want to make a cheap denture, all vulcanite, instead of taking the impression under pressure, shove the model so finished work will press into the soft tissues a little, or before setting up the teeth, punch from a piece of brass, about 26 gauge, a hole corresponding to capsule; adapt this to the root cap over the spring

Plate. E.




Nº 3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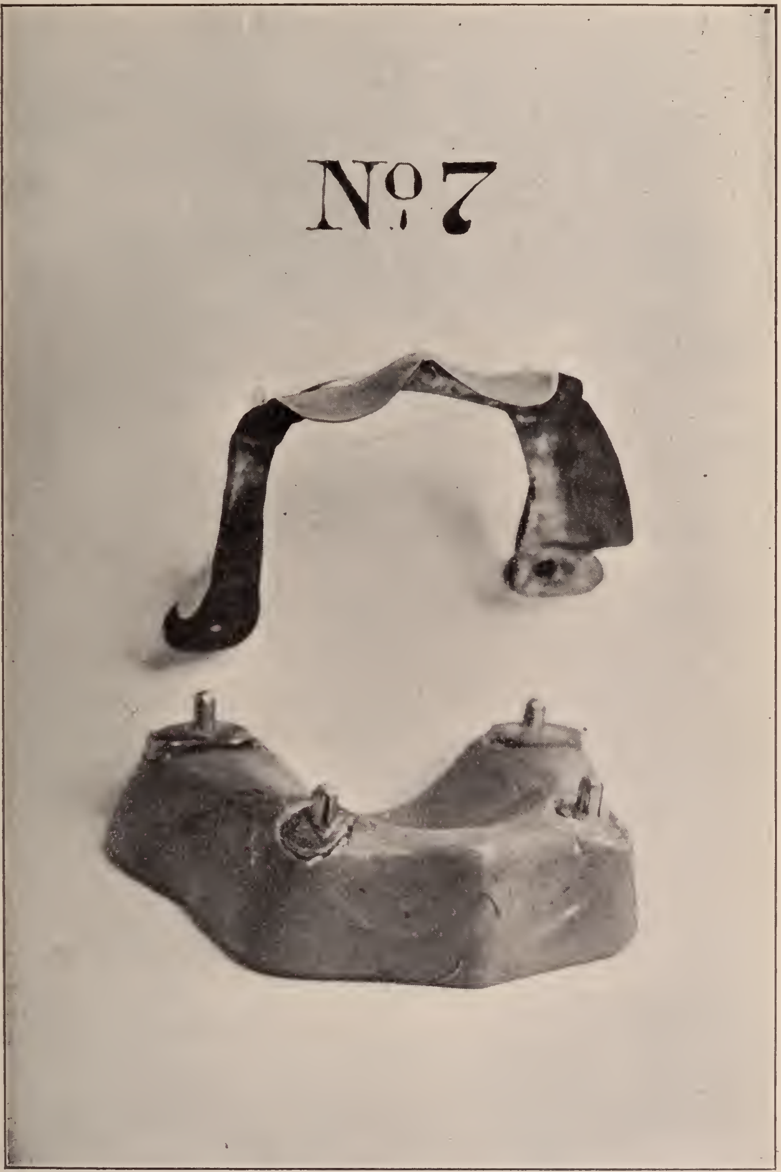

№ 7

stud and replace your crown cap. It is obvious the finished piece will press the soft tissues to the extent of its thickness. This can be used permanently by making of noncorrosive metal and subsequently removed, if tissues absorb, but the springs should be as long as possible in this case. It is obvious that if extensive absorption should take place, or you wish to place a temporary denture, all you have to do is to remove the bridge or plate, take out your crown caps, replace on the root caps and proceed as at first. The making of two or three model cases, which all should do to familiarize themselves with the work and as a means of illustration to your patients, will convince you that this system meets all requirements and fills a long felt want.

In Plate F is illustrated the reverse system, where the capsule goes in the root and the spring stud on the denture, but as this is described minutely in my illustrated pamphlet, which any one can have on application, I will not burden your pages with it. Cuts No. 3, 5 and 7 show practical cases now worn by patients with perfect satisfaction and comfort. 3 is a combination of the spring stud, and another style to be used when you do not desire to remove crowns of teeth, soldered to the side of a gold crown, and will be the substance of a subsequent article. 7 is the skeleton of a full case.

I do not care to place this in the hands of every one, only those who will use it with judgment and skill. I wish every case to be an advertisement for the method and the man who does the work, consequently I am limiting its sale. I know it has the merit to win when so used.

A CASE IN PRACTICE.*

By F. E. Moody, D. M. D., Minneapolis, Minnesota.

The modern profession of Dentistry exacts from its followers a high degree of learning and native skill, to say nothing of quick action, good judgment, precision of movement and careful discretion. Dentistry is a science. It comprehends something more than the mere mechanical process of tooth pulling and tooth filling. It includes a technical knowledge of the human anatomy, and the diseases, affections and injuries of the jawbone. The dentist is ever confronted with trying situations. He has to put up with more than mere inconveniences. He has to encounter the possible dangers of a fractured jawbone, paralysis of the face, even blood poisoning, and many other complications, all of which you of the cult are familiar.

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*Read before the Minnesota State Dental Society.

If a dentist is negligent in operating upon a patient, or fails to exercise reasonable care, he is certainly liable to the patient who has suffered injuries by reason of such negligence.

It is often the case that a dentist is subjected to the aggravation of a lawsuit, which has been brought by a patient who fancies he has been injured by the dentist, or who thinks he may get a large verdict against the dentist whether or not he had been negligent. I have recently passed through such an experience.

In October last (1899) one of my patients of this city, a man about thirty years of age, came to me for the removal of his left lower wisdom tooth. His face and jaw were badly swollen, and he was evidently in great agony. He could open his mouth but a very little. His voice was low and it seemed hard for him to talk at all.

The patient had just returned from a hunting trip of two weeks' duration. He stated that he had been suffering with the tooth eight or nine days; that he had fainted on the previous Sunday (this was Thursday) and went into a regular spasm which made him so rigid that it caused his three companions several hours' hard work to bring him to consciousness. He stated further that he had not had any sleep or nourishment for several days. He looked weak and nervous. He wanted immediate relief, and in specific terms requested me to remove the tooth in question.

I was exceedingly busy at the time having a patient in my operating chair with a gold filling half done and several others in waiting. In view of this I told the gentleman that I did not see how I could administer to his relief at once, and that he would have to wait or come again. He begged me to do what I could for him as soon as possible. So I requested my lady assistant to place him on the couch in my private room that he might rest until I could do something for him. Within a few minutes he began to toss from side to side, making agonizing complaints and outcries. Knowing him to be in intense pain, I hurried to get the filling that I was working at finished. I excused myself from the patients who had the prior engagements, explaining to them that the gentleman required immediate attention by reason of his painful condition.

Succeeding in thus disposing of the other patients, I made preparations for relieving, and, if necessary, for operating upon the patient, whose pain seemed the more aggravated as time passed. I placed him in my chair and found that his mouth could not be opened for diagnosis until I had applied hot cloths to his face for about fifteen or twenty minutes. I then succeeded in getting his mouth open so as to enable me to examine in the region of the lower wisdom tooth. I discovered that the tooth had not erupted; the mouth had fetid odor; the mucous membrane over the tooth was very much inflamed, pus being present between its folds. I was prevented from making further examinations by the patient, who, to use his own words, said he could not stand it, and wanted me to give him an anesthetic. I just stated that his mouth could not be opened but a very little owing to the inflamed condition of his face, so that I could not administer gas. I sent my assistant to a physician, who has offices on the same floor with me, to see if he could give the patient a general anesthetic. This he agreed to do if the patient could stand it. The patient was taken into his suite, examined by the physician, who decided to give him chloroform.

After having the patient fully anesthetized I examined the mouth very closely, cut away the tissues over the crown of the tooth and reflected the alveolar process so that I could see at what angle the tooth was placed. I found that the entire tooth, with the exception of the disto buccal cusp, was underneath the process and the mesial occlusial angle under the crown of the second molar at an angle of at least 50 degrees. I saw immediately that the task of removing the tooth was not an easy one. For, owing to its abnormal position, it was evident that any force applied in extracting would, according to the directions in which it was applied, tend either to fracture the tooth, the jawbone, the inferior dental nerve or raise the second molar under whose crown the tooth partially lay. I made various attempts at removing the tooth without dislodging the second molar, but finally concluded that the only way to remove it without endangering fractures was to take out the obstructing molar first. This I did. Then the wisdom tooth was very easily extracted.

The question naturally arises now, why extract the wisdom tooth? I stated above that the angle of the tooth to the jawbone was about 50 degrees out of the normal, so the tooth would have been of no use to the patient in mastication and it might have always been the seat of more or less irritation. I found on its removal what I had feared, namely—the formation of large abscesses at the apical ends of the roots. He was greatly relieved after the operation. The inflammation and swelling disappeared gradually and he was soon tending to his daily affairs as usual.

It was under this state of facts that an action was instituted against me for the recovery of $3,070.00 for injuries sustained by reason of alleged unskillful manner in which I, the defendant, extracted a tooth from the lower jaw of the plaintiff, and for extraction of a tooth that I was not directed to extract, and for the pain and suffering which it was alleged were sustained.

The plaintiff in his pleadings assumed that I, the defendant, was negligent and unskillful as a dentist in removing the wisdom tooth and that as a matter of law I had no right to remove the second molar. It was claimed, also, that the left jawbone of plaintiff was fractured and crushed through my negligence. These allegations went entirely to the manner in which the operation was performed, and was a matter of fact for the jury.

It was also alleged that the teeth were extracted carelessly, and that the chloroform was administered negligently and recklessly. Also that upon plaintiff's return to consciousness, he desired to summon a physician and that I refused him this privilege. There was no evidence to support these latter allegations, and the court so charged.

It was further charged that by reason of my negligence, paralysis of the nerves and muscles of the left side of plaintiff's face was caused.

It may be observed that plaintiff's case rested purely on the question of my negligence in the premises. The court charged, as matter of law, that negligence is a failure to do that which an ordinarily careful and prudent person would have done under like circumstances. A physician or surgeon is held to a reasonable amount of diligence, unless he contracts to do more, and is liable only for injuries that result from his neglect to exercise that degree of diligence and skill. Nor is he expected to come up to the highest standard of skill known to the profession, for mental genius, knowledge, industry, learning and experience, may enable some of his brothers to attain a prominence that is not expected in the great majority.

As to the manner in which the wisdom tooth was extracted a half dozen or more witnesses testified that it was done in a careful and skillful manner. A number of expert witnesses testified that my treatment of the jaw was correct and adequate. It was charged that if it is found that plaintiff employed defendant to remove the wisdom tooth, and good surgery required the removal of the adjoining molar, then the defendant had a right to remove that tooth, and would not be chargeable in damages for removing it.

Expert witnesses testified that removal of the molar was necessary under the circumstances and conditions as shown by other evidence in the case. As a matter of law it may be said that where one tooth is in juxtaposition with another tooth, and the relationships of these teeth are such as to prevent the removal of one without the removal of the other, or if good surgery requires the removal of both, the dental surgeon is justified in removing both, although expressly authorized to extract but the one.

The judge in this case said that he did not expect the jury to remain out longer than fifteen or twenty minutes. And in accordance to this expectation, the jury was out but a few minutes, returning a verdict for the defendant.

The case teaches us a number of things. It shows when ethics may be brought into good use. It teaches us that the dentist is bound to use the "eternal eye of vigilance." I did all in my power for the patient, and took particular precautions, knowing the severity of the case. I was especially fortunate in having called a physician to administer the anesthetic. He was witness of the fact, and his testimony did much toward obtaining a favorable verdict. Had I been alone, perhaps the shrewd manipulators of the law might have shown a preponderance of evidence against me. But this is not even probable, as the testimony of experts, who were not eye witnesses, showed that my modus operandi was in accordance to recognized and approved methods.

A case of this kind tends to bring a dentist into disrepute, and if he loses such a case his entire practice is jeopardized and endangered. Whilst I do not wish to impute to the plaintiff in aforementioned case that he had any malignant purpose in bringing suit against me, yet I am constrained to believe pecuniary possibilities may have impelled him to try conclusions. Outside parties urged him to see lawyers, and having seen them, his purpose would be by no means weakened. The dentist should fortify himself against these contingencies and dangers to which I have alluded. The dentist should be prepared to cope with what I denominate obstetrics of dentistry, i. e., those things which come unexpectedly and which require opportune and proper attention. How many dentists are there who would venture to extract the molar tooth as I did in order to accomplish the results looked for by the patient. Here was an opportunity to exercise judgment. Suppose I had refrained from pulling the teeth and waited for patient's return to consciousness in order to inquire further of his wishes. The chances are that he would have been incensed, yes infuriated, as he was in great pain. In all probability he would have hurled at me imprecations, and later might have brought suit against me, and who knows, may have recovered. I undoubtedly adopted the right course. It is to these things that the dentist should steel himself. Let him not only understand dental manipulation, treatment and surgery, but let him know also whether the law is upon his side. It is a part of the dental profession.

The dentist's position in society is no mean one. Upon him rests the conservation of a fast living race. With the teeth gone, the stomach is gone. Then may he not look for total extinction of the human race? As the well-rounded lawyers know anatomy and therapeutics, let the dentist know the legal consequences of his acts. How far may he go in a particular case, and what are his duties and liabilities? It is to the partial answer to these questions that this paper has been directed.

THE EVOLUTION OF THE ARTIFICIAL CROWN.*

By J. O. Wells, D. D. S., Northfield, Minnesota.

The early history of Dentistry is quite obscure, and is therefore a subject upon which very little of a definite nature can be said. There are records, however, of dental services having been rendered many hundred years B. C. and it is a significant fact that among the earliest of these services was that of bridging. Bridge Work then is one of the oldest phases of Dentistry, having been practiced long before Crowns were thought of and antedating Plates by even a greater number of years. True the process was crude, consisting simply of filling the space by ligaturing natural teeth to those still in the arch. While the organs thus supplied were absolutely worthless so far as mastication was concerned it cannot be denied that it was a process of bridging, although it accomplished but one object, that of filling the space.

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*Read before the Minnesota State Dental Society.

It was not until many hundred years had passed that the artistic and useful were combined in the practice of this phase of Dentistry. Practically Dentistry received its first recognition when the English College of Surgeons created a course of study whereby those desiring might fit themselves for the practice of Dentistry. Prior to this time the dental operations were very simple, consisting mainly of extractions, and were performed by men engaged in other pursuits, as Barbers, Jewelers, and even Blacksmiths. This movement on the part of the English College of Surgeons was taken up by the progressive American and carried to a much farther extent. Colleges of Dentistry were established and equipped with every facility to fit men for the practice of Dentistry. The empirical was succeeded by the scientific, the craft by a profession, the Dentist was placed upon an equality with his medical brother, and so great was the advance made in every department of the profession that America was justly called the cradle of modern Dentistry.

In tracing the evolution of the Artificial Crown, then, we come home to our own country and get our data from our own people. An examination of the early literature reveals the fact that the Pivot Crown was the pioneer in this class of work. The materials used in the crowning operations prior to the introduction of porcelain were ivory and natural teeth for the crown and compressed wood for the post. When ivory was used for this purpose the crown was carved to suit the case this required considerable skill and accounts for the popularity of the natural tooth, usually the crown of a human tooth.

When a tooth was selected for a case, regard being taken as to size, shape and color, the root was removed from the selected tooth and the crown wrapped in a cloth and boiled for half an hour, the pulp chamber was then reamed to receive the post. The root to receive the crown was cut to the margin of the gums with files, the canal reamed to receive the post which was made of compressed wood, and the artificial Crown adjusted. You will note at this time in the history of crown work the canal received no treatment other than reaming, the apical foramen was not even filled. As a result of this abscess was of frequent occurrence, which did a great deal to discourage the use of Crowns. In 1861 Dr. James Taylor, in deploring the fact that Pivot Crowns were much less frequently used than formerly, ascribed as the reason the recent improvement in Mechanical Dentistry and the frequency of abscess. When we read the methods the Dentist used at this early date, we are inclined to think that abscess was the prime factor in discouraging the use of the Crown. This led to the location of the trouble and an attempt to remove the cause. About this time we begin to see such articles in the journals as "A Method of Introducing Gold Foil into the Apical Foramen." Numerous substances were used in canals—wood, cotton, copper wire, paraffin, and cements are a few. There were about as many methods and materials as there were operators; as a matter of fact I think the methods are still numerous; however, after much study and experimenting the most approved method seems to be, when the canal is ready to fill, moisten with Eucalyptus, pump full of Chloro-percha, then force into the canal a gutta-percha point moistened in Eucalyptus. This practice greatly reduced abscess. When the parts are accessible and we can be sure of our work, it ought to reduce abscess to a very small per cent of the cases treated. Of course we are still embarrassed occasionally by this unfortunate termination of our efforts and we shall continue to be, so long as we find small tortuous canals, from which it is next to impossible to remove all the pulp tissue and be sure it is removed, and granting that this part of the operation is successful to be able to fill it and know that it is filled.

This was not the only difficulty the early Crown operator had to contend with, for when a Crown was successfully set so far as abscess was concerned, the wearer was annoyed by its loosening and either coming out bodily, or rotating on the post as an axis. This was a very grave defect and while it succeeded in rendering the Crowning operation very unpopular both among the laity and profession, it led to a series of changes in the post and the method of attaching same, which are very interesting. As noticed above, the material used for this purpose by the early operator was compressed wood (hickory being preferred). This piece of wood was round in cross section and from its base, which was attached to the Artificial Crown, it tapered to a point at the other extremity, its form being that of a slender cone. It is an interesting fact to note, in studying the causes why these Crowns should loosen, that no cementing substance whatever was used to fix them, the wooden post was shaped to fit the parts exactly and the Artificial Crown driven to place, depending upon the swelling of the compressed wood to hold the parts in position. When we consider the material used, the form and method of fixing the post, it is rather a subject of wonder, I think, that they were successful at all. This led to the trial of other materials for posts. Gold was used and in 1862 vulcanite was used, being vulcanized around a gold wire, but this was not successful and soon fell into disuse. A metallic post (presumably iridio-platinum) came into general use in 1864 and an Oxychloride cement, then called Osteodentine was used to fix the post in the canal. This came very nearly solving this part of the problem. The form of the post was changed somewhat, instead of being shaped as was the wooden post, it assumed the form of the post now found in the Logan Crown. The post being fixed in the canal the Crown was adapted and cemented to place. In 1866 Dr. Taylor introduced a method of threading the end of the post and holding the Crown in place by means of a nut; this, however, was not successful on account of rotating and loosening. The most approved method nowadays is to have the post attached to the Crown, and the Crown and post adapted to the root, as in the Logan.

While the subjects of canal treatment and post were being dealt with there was another, graver than either of them, that was receiving the attention of the profession. As we stated above, the tooth thought to be best adapted for Crowning operations was the human tooth. It was found, after being placed in the mouth, to be governed by the same laws that governed other organic matter, and it soon began to decay as did the organ whose function it was intended to perform. This led to a series of experiments in mineral substances to obtain some substance or combination of substances that would take the place of the natural tooth and that would resist the action of the fluids of the mouth.

The outcome of these experiments was the invention and manufacture of the so-called Incorruptible Tooth, a porcelain tooth. Samuel W. Stockton was one of the first Americans to engage in this industry and it was continued by his nephew, Dr. J. W. White, President of the S. S. White Dental Manufacturing Co., and former editor of the *Dental Cosmos*. At first this tooth was ill adapted as regards form, color, and physical properties to fill the purposes for which it was intended. As the skill in manipulating the several materials that go to form a porcelain body increased, the product approached the ideal at which the porcelain tooth manufacturer aimed, till to-day we have all that could be desired in the way of shades and a fair result in physical properties, but the mould will still bear improvements and additions. The Crown that has been evolved from the foregoing advances and whose prototype was the natural tooth with the compressed hickory post is the Logan Crown. This Crown is justly entitled to its wide popularity and far surpasses any Crown of this type.

Let us now look into the origin of a few other types of Crown, the Richmond, the Gold shell and the Porcelain. We will take the Richmond Crown first. Not all the cases that presented themselves to the earlier operator for his professional services were considered by him to be typical cases for the Pivot Crown. Occasionally a Bicuspid presented with the lingual wall and cusp gone but the buccal half of the tooth intact and strong. The Dentist at once set about the task of restoring the normal function of the diseased organ and at the same time saving that part that was sound. It was not a case for filling, cohesive gold was not in use then and a contour gold filling was unheard of. So the tooth was contoured to its normal form with some temporary filling material, an impression taken, die and counter die made, and a piece of plate gold swaged to fit over the temporary filling. Loops of wire were soldered to the inside of this partial crown to engage in the temporary filling material. This partial crown was put over the temporary filling, which was usually gutta-percha, and with a hot burnisher burnished to place, or else set in cement. Later on we find some progressive operators in cases where the buccal cusp and wall had been lost by decay grinding in porcelain and fastening it by means of a gold band. In 1882 Dr. Richmond combined the two methods and gave to the profession the Richmond Crown, which, with a few improvements, is the Gold-Porcelain combination or so-called Richmond Crown extensively used to-day.

The Gold-Shell Crown has the same origin as the Gold-Porcelain combination Crown, for in dealing with this same class of cases the idea suggested itself to the mind of Dr. Beers, of California, in 1873, to cover the remaining tooth substance with a gold shell.

The method of constructing this Crown has changed somewhat but the principle remains the same.

The Platinum-Porcelain combination, or the so-called Porcelain Crown belongs to the same class as does the Gold-Porcelain combination Crown, from which, I think, it may justly be said to have originated. At any rate it is constructed upon the same principle and has for its basis the same theory, but is capable of a much more artistic result. This is one of the latest advances in this line of work and in the hands of the skillful operator more nearly approximates nature than anything so far devised. Being comparatively new and at the same time old enough to have demonstrated to the mind of the most skeptical that it has come to stay, I shall be pleased, with your permission, to go somewhat into the details of its construction. The root preparation is practically the same as for the Gold-Porcelain combination Crown. To get the best result the root should be cut perpendicular to the long axis of the tooth at the free margin of the gums in the interproximal space. In the case of an Incisor, this would leave the root projecting incisally from the tissues, both labially and lingually. Now, with a round edge stone bevel the labial one-third of the root beneath the free margin; this may be done without wounding the soft tissues in the least. The enamel should now be removed with suitable instruments so that the largest circumference of the root is at the gingival line. If this result can be obtained without removing all the enamel there is no objection to its remaining. The measure is now taken, the band made and festooned before it is put on the root. This operation is simplified if the enamel is removed and the band made and fitted before the root is beveled labially, since it is rather difficult to measure a root after it has been cut beneath the free margin. After the band has been fitted and both band and root beveled beneath the free margin labially, and let me say just here that a band should never go beyond the gingival line on a root in a normal condition, we are ready for the cap and post. This part of the construction is the same as for the Gold-Porcelain combination Crown, except the post must project incisally three or four mm. The cap is constructed of 29 gauge platinum plate and put together with 25% platinum alloy solder. It is now possible to grind the facing selected, snugly against the soft tissue, wax it in place, remove (from mouth or model as case may be), invest and attach the pins of the facing to the projecting post of the cap with pure gold.

After the piece is cold remove the excess of pin and post, if any, with a stone, place the crown in a 25% solution of Sulphuric acid, then wash thoroughly to remove all of the acid. We are now ready for the body; absolute cleanliness is one of the first considerations in this part of the technic. We have no more right to expect results in porcelain work if we do not use every precaution to have every part of the operation clean than we have to expect results in a chemical analysis if the apparatus is contaminated with foreign elements. The body is mixed with a solution of gum-tragacanth and applied with a spatula, care being taken not to apply too much at once and to continually jar it with a vulcanite file; this will cause the mixing fluid to come to the surface, which is blotted off with a clean cloth. The particles of body arrange themselves in a very compact condition, and this process is continued till the desired contour is obtained, the piece allowed to dry and baked in a suitable furnace. We have resultant from this operation a Crown which in its combination of most of the attributes which go to make up the natural organ so closely approximates nature, and so admirably performs its function that it is thus far the acme of modern Dentistry.

There is an improvement in the cap of this type of Crown which, I think, very materially strengthens it. It will be remembered by those who have paid any attention to this class of work, that one of the defects that has been eliminated in the last year or so was the liability of the thin shell of porcelain that overlapped the gingival part of the band to shale off and leave a rough, irritating surface. This was eliminated by simply not permitting the porcelain to overlap the band. The same result is obtained by the improvement that was attained by permitting the porcelain to overlap the band, and at the same time the crown is rendered stronger. Take the cap as above constructed and fit a piece of 26 gauge platinum plate to the lingual part of the band so that it extends to within a millimeter of the gingival edge and project an equal distance above the surface of the cap, extending around the circumference from the beginning of the bevel mesially to a similar point distally, this is soldered with a 25% platinum alloy. We have resulting a flange projecting around two-thirds of the cap and acting as a socket for the finished crown, the gingival edge of the reinforcement is beveled with a stone to closely approximate the form of the enamel at this part of the tooth, and polished.

I fear I have already consumed too much of your valuable time and will not detain you longer by offering an apology. This subject has proven itself intensely interesting to me and I trust has not been monotonous for you. I thank you for your kind attention.

HOMEOPATHIC REMEDIES IN THE TREATMENT OF PYORRHOEA ALVEOLARIS.*

By Wm. E. Leonard, M. D., Minneapolis, Minnesota.

It would be neither modest nor appropriate for me to preface my brief paper with a résumé of the pathology and histology of a disease much more familiar to you as dental specialists than to me as a general medical practitioner. Yet from a comparatively thorough review of your latest authorities, notably Dr. E. S. Talbot's very complete essay upon what he would have called "Interstitial Pericemental Periostitis," or "Interstitial Gingivitis" (Philadelphia, 1899), I conclude that the disease belongs almost as much to the general practitioner as to you dental specialists.

First, because it has no specific germs to be eradicated by local germicidal treatment. Second, because its etiology shows a vast number of predisposing causes as hereditary gout, rheumatism, tuberculosis, syphilis, etc., degeneracy, scorbutis, and such mineral poisonings as that of mercury, lead, brass, etc., all of which are best studied from a purely medical standpoint.

Moreover, the history of the disease as recorded in your books, shows that purely local treatment by acids, as acetic, sulphuric, carbolic or nitric, or by any other local application is simply palliative and rarely curative.

In approaching the subject from the standpoint of homeopathic therapeutics, pardon my calling your attention to the fact that according to our law the remedy prescribed for a given disease must have of itself in the healthy person produced conditions very similar, not necessarily identical, to those manifest in the disease. We believe there is a constant relation between these facts and the curative power of the drug. Therefore, in the details of symptoms and conditions which make up the body of this paper, I am giving you what the drug has actually produced and cured as well, what we term both proven and clinical symptoms, the one confirming the other—and these are taken from time-honored records dating back among the authorities of medical literature, in some instances several centuries, i. e., long before the formal launching of our special school of therapeutics.

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*Read before the Minnesota State Dental Society.

My personal experience is, of course, limited, but does cover several well-marked cases, all of them at least palliated by this line of treatment, but none of them staying by long enough to bring about a full cure, as is so often true of chronic ailments.

The nomenclature of Homeopathic Materia Medica being somewhat different from the ordinary and perhaps new to you, I've been at some pains to explain each drug named in what to some may seem rather elementary form, in order to be perfectly clear, since you will look in vain for any treatise in our therapeutics upon this disease.

Our chief constitutional remedies for pyorrhoea, with indications for their use are eight only, as follows, arranged in the order of their importance:

1. *Mercurius.*—Mercury, Hydrargyrum, either M. vivus or solubilis Hahnemanni, the latter a variable oxide.
2. *Mercurius Corrosivus,* Bichloride of Mercury, corrosive sublimate.
3. Kreasotum.
4. *Natrum Muriaticum,* Chloride of Sodium, common salt.
5. *Carbo Vegetabilis,* Vegetable Charcoal.
6. *Causticum,* caustic or hydrated potash.
7. *Staphisagria,* Stavesacre.
8. *Cistus Canadensis,* Rockrose, Frostweed.

Of these drugs, in order to obtain their best effects, very small doses should be used, especially of the minerals, i. e., at least the 6 x, and not lower than 3 x of the vegetable drugs. I believe that more attenuated doses even will prove effective.

1. *MERCURIUS.*

"*Gums red, especially along margins, with white edges. Gums swollen, painful to touch, receding from teeth, spongy, bleeding;* soft, partly destroyed, with fœtid odor from the mouth.

"*Painfulness of the gums after 9 o'clock A. M. on;* burning and itching.

"Gum atrophies, especially at roots of lower teeth, leaving necks of teeth bare.

"Looseness of the teeth.

"Salivation, saliva fetid, tastes metallic, is tenacious, soapy and stringy.

"Tongue thickly coated, dirty yellow, as if covered with fur, especially in the morning, moist, shows imprint of the teeth; foul breath."

In extreme cases you will find:

"Speech difficult on account of trembling of mouth and tongue, and glandular swellings with or without suppuration."

Primary and secondary syphilis would also further indicate M.

Acute or chronic muscular rheumatism would also be a further indication for M., especially if pains were worse at night and associated with much sweating, which only aggravates instead of relieves.

2. *MERCURIUS CORROSIVUS.*

"Gums red and tender with some swelling of glands beneath the jaw; later, *gums swollen, pale and spongy; ulcerated gangrenous, purple, detached from the teeth.* Teeth loose, painful; they drop out."

This preparation of Mercury would seem preferable when the destructive process is very active, with excessive, acrid ptyalism, burning mouth and swollen glands, and any other distinctively mercurial condition.

3. *KREASOTUM.*

"Gums bluish-red, soft, spongy, easily bleeding, inflamed, ulcerated, scorbutic.

"Gums protrude, are infiltrated with a dark watery fluid and are finally absorbed."

Kreasotum seems to find its best field in children of sycotic taint, i. e., gonorrheal inheritance, according to Hahnemann, whose teeth decay early in dark specks, and whose mouths, because of the decay of both teeth and gums, always have a very foul odor.

Tall, lean women are said to especially need K. for their mouth affections.

4. *NATRUM MURIATICUM.*

"The gums, like the teeth, are very sensitive, especially to cold or warm things; they are swollen, bleed easily, are inflamed, with swollen cheeks.

"Scorbutic gums, bluish-red, commencing on left side and extending to the right, with oozing of saltish blood."

The Natrum patient has dental fistulæ, is subject to frequent smarting sore mouth, salivation and obstinate constipation, which conditions often, though not necessarily, accompany a malarial cachexia with progressive emaciation.

About salt, there is no more doubt concerning its action, because as some argue it is a very common article of food, than there is about that of Phosphorus, Sulphur or Iron, which are also absorbed in small quantities with our food; but the drug must be given in very minute quantity.

5. *CARBO VEGETABILIS.*

"Gums sore, *painfully sensitive when chewing.*

"Teeth as well as gums, pain from cold, hot or salt food, worse when touched with the tongue.

"Gums retract, edges yellow; indented, gums loose, ulcerated.

"When sucking the gum, pure blood flows into the mouth; gums bleed when cleaning them.

"*Teeth loose.*"

The teeth and gum affections of C. are always worse in changes of weather, especially in warm and damp or protracted sultry weather.

C. is especially indicated after the abuse of Mercury, in scrofulous or syphilitic persons, or old enfeebled people.

6. *CAUSTICUM.*

"Gums painfully sensitive; *swelling, readily bleeding, with tedious suppuration and frequently recurring abscesses.*"

The C. patient finds eating painful because of the gums; he is gouty or rheumatic, has attacks of stiffness and lameness in very many parts, or even local paralyses here and there, especially after getting wet. It is said to best suit dark-haired people of rigid fiber, and should prove a common and efficient remedy in this disease.

7. *STAPHISAGRIA.*

"Gums spongy, fall away from the teeth, or present fistulous looking ulcers; gums pale, white, swollen, *aching when touched,* bleed when pressed upon and from cleaning teeth; burning gums with swelling and heat of cheek."

As in Kreasote, the teeth turn black and show dark streaks; there are fistulæ and the background is a gonorrhœal or scrofulous taint.

The S. patient is nervously very weak, "below par," especially because of sexual excesses.

8. *CISTUS CANADENSIS.* (Rockrose, Frostweed.)

"Scorbutic, swollen gums, separating from teeth; easily bleeding; putrid, impure breath."

This remedy is an oldtime valuable antisyphilitic and antiscrofulous remedy, and should find a definite if lesser place in the treatment of pyorrhoea.

Other remedies useful for various phases of this trouble, as given in the index below, are as follows:

Antimonium Crudum. (Sulphide of Antimony.)

Argentum Nitricum. (Nitrate of Silver.)

Arsenicum Album. (White Arsenic.)

Aurum. (Gold.)

Calcarea Carbonica. (An impure carbonate of lime made from oyster shells.)

Calcarea Phosphorica. (Phosphate of Lime.)

Capsicum. (Red Pepper.)

Carbo Animalis. (Animal Charcoal.)

Chamomilla. (Chamomile.)

Dolichos. (Cowage.)

Fluoric Acid, Graphites. (Plumbago.)

Hamamelis. (Witch-hazel.)

Hekla Lava.

Hepar. (A preparation of one-half flowers of sulphur and the other half Calcarea Carbonica.)

Hyoscyamus Niger.

Iodine.

Of the salts of potash the bichromate, chlorate, iodide, phosphate, and sulphate.

Lachesis (the poison of the lance-headed viper of South America).

Lycopodium, Magnesium Muriaticum. (Chloride.)

Muriatic Acid, Nitric Acid, Nux Vomica, Phosphorus, Phosphoric acid, Sanguinaria, Sepia (the juice of the cuttle-fish), Silica (Oxide of Silicon, sand), Sulphur, Sulphuric Acid, and Terebinth.

Many drugs in this list you will recognize as having some affinity for the dental structures, for you are familiar with their local action.

INDEX OF CONDITIONS OF THE GUMS,

belonging to pyorrhoea, as found under various other remedies than the above list of eight, which remedies have often proven palliative and sometimes curative of the conditions mentioned.

Aching, neuralgic, painful gums:

Arsenic, Carbo Animalis, Dolichos (pain worse at night), Hamamelis, *Hepar,* Hyoscyamus (pain intense after extraction), Iodine, Kali sulph (chronically painful), Magnesium Muriaticum, *Plumbum,* Sepia, Terebinth.

Abscesses of Gums: Fluoric acid, Hekla lava, *Silica*, Sulphur.

Absorption of Gums: Iodine.

Bleeding Gums: Antimonium crudum., Argentum nitricum, *Arsenic,* Aurum, Calcarea carbonica, Carbo animalis, Graphites, *Hamamelis, Hepar,* Iodine, Kali chloricum, Kali phosphoricum, Lachesis, Lycopodium, Magnesium muriaticum, Muriatic acid, *Nitric Acid*, Nux Vomica, *Phosphorus, Phosphoric Acid,* Sanguinaria, Sepia, Sulphur, Sulphuric Acid, Terebinth.

Bleeding when cleaning gums: Lycopodium, Terebinth.

Burning gums: Capsicum, Chamomilla, Terebinth.

Detached gums: Antimonium crudum, Phosphorus, Phosphoric acid.

Bleeding profuse, excessive: Phosphorus.

Blood dark, blackish: Arsenicum.

Blood dark, passive flow: Hamamelis.

Inflamed gums: Argentum nitricum, Calcarea carbonica, Calcarea phosphorica, Capsicum, Iodine, Kali Chloricum, Muriatic Acid, Phosphorus, Silica.

Lime, blue on margin of gums: Plumbum.

Odor foul from gums: Calcarea carbonica, Graphites, Kali chloricum, Phosphoric Acid.

Pus from gums: Silica, Sulphur.

Redness of gums: Aurum, Carbo Animalis, Dolichos, Iodine, Kali chloricum, Kali phosphoricum, Nitric Acid, Sepia.

Rubbing gums causes bleeding: Graphites, Lycopodium, Sepia.

Scorbutic gums: Arsenic, Kali chloricum, Kali phosphoricum, Muriatic acid, Nitric acid, Sulphur, Terebinth (with hemorrhage).

Sensitive gums: Capsicum, Dolichos, Fluoric acid, Kali chloricum.

Sleep, pain in gums prevent: Dolichos.

Sore, tender gums: Argentum Nitricum, Aurum, Baryta carbonica, Calcarea carbonica, Graphites, Hamamelis, *Hepar,* Kali bichromicum, Phosphorus, Silica.

Spongy gums: Capsicum, Hamamelis, Kali phosphoricum, Lachesis, Terebinth.

Sucking, when—gums, pure blood flows: Nitric acid.

Swollen gums: Arsenic, Aurum, Baryta carbonica, Calcarea carbonica, Capsicum, Carbo animalis, Chamomilla, Dolichos, Graphites, Hamamelis, Iodine, Kali bichromicum, Kali jodatum, *Lachesis,* Lycopodium, Magnesium muriaticum, Muriatic acid, *Nitric Acid,* Nux Vomica, Phosphorus, Phosphoric acid, *Plumbum,* Sepia, Sulphur.

Throbbing Gums: Calcarea carbonica, *Sepia,* Sulphur.

Touched, bleeding when: Lycopodium, Sepia.

In order to successfully employ these remedies, careful study must be made of the constitution suited by each drug, i. e., what is sometimes called the genius of the remedy. This is only learned by a general knowledge of homeopathic medicines, such as the general practitioner possesses. Yet the dentist can become quite skilled in treating such cases by carefully working out a few.

Those that he finds not amenable to his remedies and thorough local care, he should recommend to some good homeopathic prescriber. I cannot close this paper with the good old Latin phrase "Quod erat demonstrandum," because what I have collated here was set down in our homeopathic materia medica before Pyorrhoea was recognized as a disease, and yet remains for you to enlarge upon and corroborate in your special practice. And I believe that the results will justify your pains.

PROCEEDINGS OF SOCIETIES.

SEVENTEENTH ANNUAL MEETING OF THE MINNESOTA STATE DENTAL ASSOCIATION, HELD AT MINNEAPOLIS, SEPTEMBER 3, 4, 5, 1900.

Dr. T. B. Mercer read a paper entitled, "Normal Occlusion as a Basic Principle in Orthodontia." See page 401.

DISCUSSION.

DR. O. A. WEISS: Owing to the somewhat diverse character of the paper, and the great scope of thought involved in at least one portion of it, I have made a few notes which, with your indulgence, I shall refer to as I go along, as I wish to confine my remarks within certain bounds.

In the practice of orthodontia two important points are always to be considered, but by a great many who undertake the treatment of irregularity of the teeth, little, or no attention at all is given to one of these. The two points of consideration to which I refer are, first, correction of the irregularity, and second, permanent retention of the corrected condition. If the first has been *actually* done, the second is comparatively easily done. Correction of an irregularity is not *actually* done, as is often supposed, by merely bringing the teeth into correct alignment in the arch, unless we have at the same time either normal occlusion or a correct occlusion of all the teeth. This brings me to the point in the title of the paper just read. The importance of normal occlusion as a diagnostic feature has been fully dealt with by the essayist, so that nothing further need be said of that. I have spoken of normal occlusion and correct occlusion. Let me explain what I mean by that. A correct occlusion is not of necessity a normal one, but it involves the same principles. In a normal occlusion we have a certain definite relation of the teeth of the upper jaw to those of the lower, e. g., in the first bicuspids of the upper and lower jaws, we find the distal slope of the cusp of the lower articulating with the mesial slope of the cusp of the upper. Now, in the correction of an irregularity we may find it necessary to extract the first bicuspid in the upper jaw, then we must have the distal slope of the cusp of the lower first bicuspid articulating with the mesial slope of the cusp of the upper second bicuspid, not the normal relation, but still gives us the principles of a normal relation, and may be termed a correct relation.

We also have a certain correct relation of the six anterior teeth of upper and lower jaws, i. e., an overbite with the labial surfaces of the lower teeth articulating with the lingual surfaces of the upper teeth. *In the degree that we have established correct occlusion and articulation, so will the success of our efforts be.*

Correct occlusion and articulation are of the utmost importance, especially in correcting irregularities of the six anterior teeth. You need hope for no permanency of results unless this has been carefully observed. I believe the vast majority of failures of permanency of corrections of irregularities is due to this cause, lack of correct occlusion, and next, as a cause of failure, is imperfect or insufficient retention by mechanical means.

I must take exception to the essayist's statement in regard to "etiology having scarcely received the cold respect of a passing thought." Dr. Eugene S. Talbot of Chicago has devoted over twenty years in careful research and investigation of the etiology of irregularities of the teeth, and in my estimation he stands without a peer in this land to-day upon the subject of etiology of irregularities of the teeth.

It seems to me that such a statement as made in the paper is not paying proper respect to such extensive labors as those of Dr. Talbot, which are contributed purely for their scientific value rather than for their practical or commercial value. One has only to read his work and the unbiased mind is convinced of the magnitude and scientific character of it. It is by no means a "passing thought." We cannot hope to treat irregularities by way of their cause, excepting local causes, as is sometimes attempted in the treatment of diseases, thereby diverting knowledge of etiology to valuable practical use. Why! some of our most eminent men in the practice of orthodontia—authorities—ignore etiology entirely, excepting local causes. Thus you see there is not the incentive for extensive labor along this line, and when we find a man setting aside all considerations of material reward for his work, laboring ever faithfully onward in his thirst for knowledge, it seems to me he is at least entitled to our respect and appreciation, and an acknowledgment of something more than that accredited by the essayist. I admire such a man beyond bounds of expression, and I would say to you, gentlemen, that every one of you who has not read Dr. Talbot's work entitled, "Etiology of Osseous Deformities of the Head, Face, Jaws and Teeth," should procure a copy and read it, then read it again, read it without prejudice, and if you do not accept his views and arguments you will be broader gauged men for having read the work, and will be keener observers of life round about you as you see it daily. I think it is one of the most interesting works in dental literature. It tends to extend our observations because of the many phases of life that are investigated, and it is hardly necessary for me to say anything about the value of extension of our observations.

It is true that neurosis and degeneracy as the chief causes of irregularity of the teeth has not been proven in the same way as has the cause of tuberculosis or some other disease. Cause and effect act slowly in the production of irregularities of the teeth, and to prove them along the line of neuroses and degeneracy in the manner that causes of disease are proven is a task utterly impossible, as it would extend over a period of not one generation, but several generations. Neuroses and degeneracy as etiological factors in irregularities of the teeth cannot be proven by the scalpel or the microscope. Medical science as a whole is at best considerably speculative, and many things are accepted only by analogy with things that are known.

One other point in the paper that I would differ with is the absolute necessity for plaster impression in order to "carry out the scheme of classification as given." It does not appear to me that there is anything particularly peculiar about this scheme of classification making it imperative that plaster be used in taking the impressions. Modeling compound properly used will answer every purpose as an impression material in a *great* many cases. It is only in those cases where the inclination of the teeth varies so greatly that the modeling compound impression is badly drawn out of shape in removing from the mouth that a plaster impression becomes necessary. It is true that plaster gives a sharper impression, but it is equally true that it is much more difficult and uncomfortable for the patient to secure a good plaster impression, and as long as we can obtain good working models from modeling compound impressions in the majority of cases, I see no reason why plaster should be used. I have seen very good modeling compound impressions and have seen very poor plaster impressions. The matter does not rest entirely with the material used. Oftentimes we particularly desire a good impression of the gums over the anterior teeth, together with absolutely correct relation of the upper to the lower teeth. Dr. C. S. Case has a method of taking an impression of the upper and lower anterior teeth whereby the gums are taken in the impression to their utmost extent, and this, too, shows the teeth and gums in their absolutely correct relation—one jaw to the other. This method consists simply of cutting out an oval shaped piece of plate, either aluminum or brass, large enough to cover the labial surfaces of the upper and lower teeth and gums, and then bending it somewhat to conform to the arch, and then using this to hold the modeling compound while taking the impression.

Dr. M. A. Knapp: I always dislike to speak about anything of which I have not made a thorough study. This subject is treated very fully in the *Cosmos*. The causes are important in a great many cases, especially where the causes can be removed. Where the causes cannot be removed I do not think it is so important for the benefit of the patient. We do not see the cases early enough; they are too much advanced before they come to us, and if we have to correct them we have to put the teeth in normal position the best way we can. A tooth has a tendency to occupy its proper position. I think all teeth have that tendency, and when they are put in position, without some artificial means operating to move them again, they will remain there. A tooth may be suddenly moved, and the quicker the operation is performed the greater the tendency of the tooth to go back. If it is let go it immediately goes back, the alveolar process acting as a mechanical means. Now this occlusion is a very important thing. In many cases we know that the teeth of the upper and lower jaw do not agree; the lower jaw is smaller and they will not agree as normal teeth, and I think it would be rather difficult to make the teeth agree. I could not do it.

Dr. C. A. Van Duzee: I got way back in the corner where I thought the president would not see me. There is only one thing I would like to say on this subject. It strikes me that the fundamental principle in governing the practice of orthodontia is to know absolutely what is normal before we can say definitely what is abnormal. If that thought was in the mind of everybody here I should feel that the paper was not read in vain.

Dr. C. W. Jones: I have not much to say on the subject, but I have been impressed very much by observing the occlusion of the teeth, and think it has been overlooked a great deal by those who have not looked at anything but getting the teeth in proper alignment. Anyone interested in the regulation of teeth should read the paper read by Dr. Bogue at Niagara Falls last summer. In some cases the occlusion is very bad when teeth have been made regular for appearance only. I have had cases myself where the upper teeth were so irregular that it was necessary to extract the bicuspid, and in doing so it drew the molars forward and the cuspids back, thus spoiling the occlusion with the lower teeth. In such cases I think it would be necessary to take some out of the lower jaw besides for the sake of preserving the occlusion.

Dr. T. B. Mercer (Essayist): I have not a great deal to say at present. I should rather look upon what Dr. Weiss has said, with one or two exceptions, as an endorsement. I think I can say about Dr. Talbot, having read the book, that there can be no question but that he has done a great work, and, as I said to him the other day, I would not discuss anything from Dr. Talbot's standpoint, because I am not able to do so. I think he advances most plausible theories, but in my small way they will not stand proving. That is, to some extent. He also mentions Dr. Case's method of taking an impression of the anterior teeth. The school that I follow can do that about as well and have the most perfect occlusion of all the teeth, and you must use the first molar on either side as a base, but in that case it could not be used. The gentleman again spoke of the cause as not being important at all. I would like to ask if that might not be because we have not done any research work. If we had we might have learned the cause, what was the matter. If one is bound to assume that the cause had nothing to do with the matter perhaps it would not. If we do some work in that direction and do the work thoroughly we may learn how valuable a bearing the cause has. Dr. Weiss said he did not altogether endorse the plaster impression in every case. I think Dr. Weiss will admit that a plaster impression is better than any compound could possibly be, and to my mind we must insist on having the best. I do not think we should seriously consider the small matter of inconvenience the plaster is to the patient.

Dr. O. A. Weiss: If I conveyed the idea that Dr. Case takes an impression of the anterior teeth *only* for making models to consider the treatment fully, it was a mistake. This method is simply an easy one for obtaining absolutely the correct relation of the anterior teeth just as they are in the mouth. By taking an impression of the teeth in that way it gives you a model of those anterior teeth just as they are in the mouth without any variation whatever. It is not always an easy matter to place two plaster casts in correct relation to each other when the occlusion is faulty, no matter how perfect the impressions may have been, and in such cases this method of Dr. Case's is of value.

Dr. Geo. S. Todd: As I understood the essayist he wished to convey the idea that the operator should have in mind always not only the normal occlusion, but the ideal occlusion also, and he could do more effective work by never forgetting it. The normal occlusion does not necessarily mean the ideal occlusion. What is normal in one mouth would not be normal in another, and I think the gentlemen should recognize that one point in the doctor's paper. I think that was the main part of his paper, to keep in mind the normal and the ideal occlusion.

Dr. L. D. Leonard: I think most of the gentlemen feel as I do about this regulating business. It gives them a cold chill to have anything to do with it.

Dr. R. E. Nixon, Duluth, read a paper entitled, "Dentists as Prescription Writers." See page 330.

DISCUSSION.

Dr. E. C. French: I think that paper is a good one and the ground he takes is well taken. I am free to say that I do not write many prescriptions in my practice, my patients fortunately usually require local rather than systemic treatment. I think the doctor's paper is timely. I see a great many prescriptions written by dentists that are wrong, and it is better if we do not know the Latin of the medicine we want to prescribe to write it in good plain English, write our name in full, with D. D. S. added, and let it go at that. It is a subject I never heard mentioned at any dental convention I ever attended. I think it is a suggestion in the right direction and I compliment the doctor on his paper.

Dr. E. P. Holmes. I think the idea is good and was well presented. I think the doctor had me in mind when he wrote the paper; I feel a little guilty in that direction myself.

Dr. Mary V. Hartzell: We have been arraigned by the doctor as a class a little unjustly, I think. I am sure the dentists are not the only people who write prescriptions imperfectly. I think they are more forgivable because they are not called upon daily to write prescriptions as medical men are, and do not get the practice.

Dr. R. E. Nixon (Essayist): If you will take notice in the first part of my paper I said, "Do our colleges teach prescription writing sufficiently?" That is the question; that is what I started out with. I am asking that question. That is the point to be argued. I wanted the gentlemen to take up that point and argue it, whether our colleges teach prescription writing sufficiently. In another place I say, "There are a great many physicians who are not capable of writing a proper prescription," and in that way I covered the statements that were made.

Dr. E. C. French: I might go a little farther and ask, Do our dental colleges teach any branch of the profession sufficiently well? I do not know. I am free to admit I do not know. I never attended a dental college. I have had a great many graduates of dental colleges as my assistants and I never had any that knew it all or thought that dental colleges taught them sufficiently in any one branch; they do not have time. Take a dental college with five or six hundred students and a half dozen professors. They may get the idea, but they do not have ideas illustrated in a practical way. I am not finding any fault with any particular college nor with all of them. The question is whether they are giving sufficient instruction, whether they are not trying to cover too much ground in too short a period of time. We used to have two years, then three, now we have three or more years. I presume after a while a student cannot get into college unless he is a graduate from some college. That is all right; that suits me. There are a great many things that dental colleges have got to learn. They have got to learn that they cannot make a whistle out of a pig's tail. They may graduate a boy, but unless he possesses to a large degree constructive ability he will never make a dentist. Dental colleges, if they have taken such an one through, at the close of first year's instruction should be able to sift out undesirable material and frankly say, to-wit: "We cannot do anything with you; you had better go and plow the earth with your feet, you will make more of a success." I agree with the doctor fully that they do not teach the practice of prescription writing as they should, although there are some schools that pay more attention to that than others. In many cases it is more the fault of the student than of the college.

Dr. Mary V. Hartzell: I remember the points the gentleman made, but he brought out the others more strongly to the attention of the society. I think it would be well for us all to remember when we leave the dental college it is a commencement, not the ending of our education, and if our eyes have been opened to the things we need the dental college has served its purpose.

Dr. Clint: As to the paper read and the question asked as to whether our dental colleges are educating sufficiently along this line, I want to say that I am in hearty accord with what our friend has offered here when he says they do not. Life is too short to teach anything perfectly or to teach everything in all lines of dentistry. I am free to say I write very few prescriptions, and if I think I have a case on hand that requires careful consideration I think it wise to call in a man who has given special attention and has been educated along those lines. I would not like to limit the field of the dental profession; I think we should be free to occupy all the lines and cover them as well as possible, or aim to do so in a thorough professional manner. Do dental colleges do all that is required of them? I would say no, emphatically no. I might ask the question, what do our dental colleges exist for? Many of them exist for the purpose of giving a proficient education and many of them exist for the purpose of paying dividends, and sometimes in all those cases they may keep an eye on the object of their existence. In our country, you know, we are young in dentistry, young in every way, but our college is a college for the dental profession and we exist for the purpose of educating along dental lines. We are trying to set a high standard for matriculation along all lines.

I heartily congratulate the essayist on his paper this afternoon and think he should devote his attention to paper writing from time to time.

Dr. R. E. Nixon (Essayist): Speaking of prescription writing, the gentlemen say in their practice they do not have very much. There is no reason why they should not write prescriptions. In nine cases out of ten that come into a dentist's office there is no reason why a man should not conclude to prescribe some kind of mouth wash. If he should prescribe some drug having but one name, as we have a great many of them, he should be able to prescribe just the same as a physician would prescribe in a proper way. He should not prescribe a special patent medicine. He should be able to write a proper prescription for a mouth wash and he should be able to write a prescription for a tooth powder. It does not necessarily have to be internal treatment. There is an opportunity given a dentist almost every day of writing prescriptions. I take every opportunity to write a prescription I can get in order to perfect myself in that line. A lady said a few moments ago that we are young and just starting out, but when we have the opportunity to learn these things when we are young we will not have to learn them when we are older. Another thing, the colleges may lay the foundation of prescription writing, but not in the proper manner. I think I have been through one of the best colleges in the country, so far as I am concerned, and I am sure they did not teach prescription writing as they should. I paid as much attention to the subjects they taught as anybody, but I did not derive as much benefit as I should have derived. Speaking of physicians writing prescriptions, we have nothing to do with physicians along that line, they can take care of themselves. You take a dental student when he is turned out of college he has his foundation, and the medical student has his foundation. The medical student can write his prescription, but show me the dental student that can write his.

Wm. E. Leonard, M. D., Minneapolis, read a paper entitled, "Homeopathic Medicine in the Treatment of Pyorrhoea." See page 430.

DISCUSSION.

Dr. T. B. Hartzell: I differ very radically in my belief and practice as regards the use of drugs, as I believe pyorrhoea is the local expression of a disease that I think can be reached in a different way. I do not believe I will indulge in a discussion of this paper.

Dr. J. W. Penberthy: I might say you have called a very poor advocate for local treatment only. I have had some experience in treating pyorrhoea, but I am not able to give you as much of the experience as I would very much like to give. I have made a study of this disease somewhat, and for a number of years I followed the practice of many others, treating it locally, believing I could help them a great deal, but the more I treated it locally the more I believed it was but a local manifestation, a disorder that should be reached systemically, and for that reason, and being a firm believer in homeopathy, I sought my remedy in that direction. I have had a number of cases that I have treated, but some of them, as Dr. Leonard has said, have not followed up the treatment, so I cannot say there has been a complete recovery, but they have very materially improved. One case in particular, which I mentioned last year, where a lady had been under treatment three years, and I think it was after six weeks' treatment with mercurius vivus she was cured. I do not think we can *eliminate local treatment by any means*; tartar must be removed and teeth cleaned as perfectly as possible, leaving no roughness whatever. I would like to say a great deal more on this subject, but I will leave its discussion to some one else.

DR. LAURENCE P. LEONARD: Personally I believe as Dr. Shepard of Boston has recently expressed it. I believe that pyorrhoea is largely a filth disease. I have never treated it systemically, but I have treated it a great deal, and, if you will pardon me, Mr. President, I have been successful. I am in hopes of having a patient here to-morrow for whom I did a great deal of work along that line about three months ago. I met him on the train this morning the first time since finishing the treatment—mechanical treatment. I was very anxious to ascertain the result to one of the teeth especially, a left lower lateral incisor. He told me it was much improved, but not wholly well yet; the rest were in good shape. I speak of this case because I think it is possible the gentleman will call here to-morrow; he promised me to stop off long enough to-day or to-morrow to let the society see the case. I am glad Dr. Penberthy laid some emphasis on the importance of cleanliness, removing the tartar from the teeth. I believe that is one of the points wherein we largely fail; the other point in which we fail is in not correcting the occlusion. Now I will admit that I am an extremist upon these two features in connection with pyorrhoea, namely, the thorough removal of tartar and the thorough regulation of the teeth. I believe there are some cases where it is impossible to remove the tartar, and in such cases we lose the teeth, excepting, Mr. President, we extract that tooth, clean the tartar off and replant it, an operation which has been done in the East and it has been done in this State. Mr. President, the day is coming when the treatment of pyorrhoea will consist in the extraction of the teeth, removing the tartar and replanting again and giving the correct occlusion. I did it twice. The first time was about two years ago, but I have said very little about it. Here in May I noticed that the *Cosmos* of that month contained quite a report from Dr. Hofheinz, of Rochester, N. Y. He has been doing it quite successfully for several years. In cases where the tartar had accumulated in such positions upon the root or roots, especially of a superior molar, where the tartar has become deposited all around a certain portion of those three roots, it is utterly impossible to remove it, and where, Mr. Chairman, the mucous membrane of the mouth has broken down into those pockets and the mucous membrane will not unite with the periodontal membrane. Now in order to cure that you have got to remove the tartar, which in the mouth is utterly impossible to do, and the only alternative is to extract that tooth, remove the tartar, remove the mucous membrane which lines those pockets and then replant the tooth. Then you have a fresh, raw tissue, connective tissue, to unite upon a clean periodontal membrane. There is no question in my mind but that constitutional disorders may bring it on and may accelerate the disease, but I believe, as I said before, the main thing that we as dentists should keep before us are those two mechanical features, viz.: The thorough removal of the tartar, which in many cases is almost impossible to do except———

Dr. O. M. Huestis: From the reading of the paper we would understand the medical profession to believe that pyorrhoea is a gum disease. I do not understand that it is a gum trouble. The trouble is in the alveolar process, while the disease may involve the gums. From the wording of the essay read they regard it as a gum trouble, but I think a majority of the dentists regard it as a trouble of the alveolar process, which involves the gum, of course. Dr. L. P. Leonard speaks of removing tartar. In the worst cases of pyorrhoea we have there is not a sign of tartar.

Dr. C. H. Goodrich: I wish to congratulate the essayist on this very able paper and thank him for bringing before the society the method of treatment he has mentioned. I am a believer in homeopathic treatment of pyorrhoea. I have wished many times I were an M. D., a graduate from some good homeopathic college, so I might understand the treatment of that disease. I have had some success in the homeopathic treatment of pyorrhoea through the courtesy of the homeopathic profession, chiefly through a brother of mine, who is a physician in St. Paul. I would see the patients every two or three weeks, and all the cases have been remarkably improved. Much more so than I could possibly hope for by any local treatment. Of course, I do not mean by that that no local treatment was given. I would see the patient every week or two, wash the gums and in a general way treat the patient locally, as we do in such cases. In six or eight weeks the case would be so much improved that I would feel like calling it cured if I did not know better. Whether there is a cure for pyorrhoea, you know better than I do. but I believe there is no absolute cure, but if homeopathic remedies will help us out in our pyorrhoea cases we should not be slow to avail ourselves of them.

Dr. E. C. French: I am like Dr. Leonard. I have nothing to say, but I want to talk. While I recognize that pyorrhoea is a systemic disease, not a local disease, the local part of it is simply the result of systemic trouble, and until we get that fact fixed in our minds and treat the cases systemically we are never going to have a cure of pyorrhoea. I had a good many cases of pyorrhoea in my practice in earlier years and I am free to acknowledge I never cured a case in my life, and I had as good success as nine-tenths of the dentists have. Talking about the removal of tartar, as you call it, if you will examine carefully the black tartar that will stick to a tooth you would find it would take four yoke of cattle to get it off, and compare that with the ordinary tartar you find around the teeth you will find it is an entirely different thing. It is the result in my opinion of the exudation from the disease of the gums, and it deposits itself there and it is utterly impossible to remove it entirely. When I have to take a tooth out affected with pyorrhoea it is going to stay out; it is not going to be put back into the mouth again. I think I have got rid of one devil and when I see another I am going to take him, too. I have stopped pyorrhoea by the extraction of one tooth. I do not think any of us know anything at all about it, and the quicker we wake up to that fact and study the thing from the right standpoint the sooner we will begin to make some progress, and I think the doctor's paper hit the nail squarely on the head when he said we must study the thing from the correct standpoint. I know that in my wife's family the thing is hereditary. I have seen three or four generations of them. It always crops out in that family. I have got the teeth of one of them and wish I had the rest of them. It is hereditary in my family. I think we have the thing started from the right standpoint; now let us keep at it. I have treated pyorrhoea with homeopathic remedies and I have seen good results from it. When you commence to treat systemically, commence to put the patient's system in the right condition, you are on the right track. If they want arsenic, give them arsenic, give them anything.

Wm. E. Leonard, M. D. (Essayist): I am sure I have to thank the members of the association for the cordial way they have received the paper. I gave it to you in the best of spirit because I cannot say from our literature from a careful examination I made from the standpoint of this disease, that we have any record of cases cured, because the records of the cases I gave you

I picked out from drugs that go back even beyond homeopathic literature. It is not in the province of the discussion to treat of this disease from a local standpoint, and yet our attention is drawn to the study of this disease in the family, the individual family, the mother, the daughter, the sons having the disease, one after the other. We find it, as Dr. French has said, hereditary, but I cannot go back so far. I am not as old as he is. As to the pathology of the disease I did not take that up, but in medical works it is considered a distinctive disease of the gums. I want to say again, gentlemen, this is a field for every intelligent dentist in the thorough systemic treatment by homeopathic remedies. We accomplish in gonorrhoeal cases wonderful results, and I do not see why it should not be true of the mouth and gums.

Dr. Frank E. Moody, Minneapolis, read a paper entitled, "A Case in Practice." See page 418.

DISCUSSION.

Dr. T. B. Hartzell: Dr. Moody's treatment of his case was, to my mind, exactly correct. The patient's tooth was abscessed, and personally I had occasion to remove a great many teeth of that class. Dentists have come to the conclusion through their experience that a man is frequently justified in removing a molar where it prevents the free extraction of the other tooth. The case is going to be carried to the supreme court, I regret to say. I was very glad to render some assistance to Dr. Moody in the interest of the profession, because if that case were decided against us we certainly in this State would have no recourse, and it would not be safe to undertake such cases without having the patient sign an agreement and entering into some stipulation as to what we may or may not do in certain cases.

Dr. E. C. French: Did he sue the doctor for $3,000 for two teeth? When teeth come as high as that they must be worth something.

CLINICS.

Operation: Porcelain Inlay.—Dr. Wm. H. Cudworth, Milwaukee, Operator. Reported by Dr. C. H. Stearns.

The instruction which he gave is what he follows out in practice. The first point was to get sufficient separation so as to give the inlay proper contour and in such shape as to maintain the proper contact when they come together again. The next step was the removal of the decay. Then in the forming of the cavity he makes no undercut. He does attempt, however, to preserve at least two parallel walls, or as nearly so as possible. First he smooths and polishes the marginals, being very careful to leave no acute angles. He smears the cavities with vaseline to facilitate the removal of the matrix, using No. 40 gold foil with which to make the matrix, getting the case large enough to cover the marginals, forcing it into the cavity with something he called pledgets of cotton, and after forcing it as closely into that position as possible with the cotton pledgets he takes a very small burnisher and burnishes it in place, especially around the margin, being careful to reach the full depth of the cavities, then taking a piece of sticky wax and warming it, he places it in the cavity, and while in a plastic condition forces it into the matrix. He places it into the matrix and forces it into place with considerable force, thus perfecting the adaptation and also having something which will retain the form of the marginals while removing from the cavity. I should say after the burnishing of the matrix in the cavity he also burnishes the edges of the matrix over the margin, leaving space enough to maintain the margin and contour of the tooth, using this as a guide in contouring the inlay. In placing his piece of wax in the cavity of the inlay he turns this over the edges so as to preserve the entire form of the matrix intact. After this wax is hardened he removes the matrix and invests it in equal parts of plaster and silex. When this is set he washes out the wax with hot water, places the matrix in the furnace and burns out the residuum of wax. He then fills the matrix with the powder mixed with absolute alcohol, and after baking he replaces any shrinkage; he fills up so as to account for all shrinkage and bakes again and again until he gets the full contour filled in the matrix as perfect as may be. Then dipping this in water and removing the little feather edge of porcelain he makes the proper undercuts in the inlay and dentine, takes a knife edged wheel and makes a slight undercut in the inlay, and also making a slight undercut in the cavity. He then sets the inlay with hardening cement mixed to a creamy consistency, presses it firmly into place and when the cement is hardened he removes the case and finishes with strips and discs.

OPERATION: DEMONSTRATING THE USE OF LOGAN CROWNS AS PIERS IN BRIDGE WORK; ALSO A FEW PRACTICAL POINTS IN OFFICE PRACTICE.—Dr. A. E. Peck, Minneapolis, Operator. Reported by Dr. F. E. Moody.

Dr. A. E. Peck had a bench clinic and gave us many valuable suggestions in the practice of our profession. Most of them were entirely original. He demonstrated the use of Logan crowns as piers in bridge work. The root and cap were prepared after the same manner as for a Richmond crown. He then punched a hole for the reception of the pin. A piece of pure gold was placed between the porcelain and the cap to obtain perfect adaptation. A piece of pure gold, 32 gauge was then burnished onto the back of the Logan crown, extending on to the gold band which formed backing for the same.

He illustrated a new method of setting bridges with S. S. W. soft gutta-percha instead of cement. He used stopping slightly heated and placed it on the pin; then inserted the crown or bridge. The same was removed and the surplus stopping trimmed off. A drop of cement placed on end of pin and the crown driven to place. The advantage of using the S. S. W. soft gutta-percha is that it yields readily to heat.

He then illustrated Dr. Wm. H. Taggart's method of applying a rubber dam to labial cavities by means of pins driven into necks of teeth. The instrument being magnetized retains the pins, allowing them to be inserted.

He showed the so-called Terraplastica investing material and explained its advantage over some of the other investments in that it does not shrink away from the teeth.

He demonstrated a method of covering a plate with vulcanite rubber, which prevents moisture from reaching it (plate) while taking an X-ray picture in the mouth.

He demonstrated the advantage of using a diamond in truing up carborundum wheels.

He then demonstrated his method of excluding moisture during short operations without the use of the rubber dam. Wires were soldered onto the lower part of the Justi reflector, which engaged the cotton and held it in position.

He showed an original method of making removable backings similar to the Mason. He takes an ordinary facing with the pins one above the other, and uses gold, 30 gauge, for backing, bending the pins down tightly. He raises the gold on either side of the pins to an angle of forty-five degrees, filling this V shape with solder and finishing to the desired thickness, after which he burnishes a piece of pure gold to this backing and stiffens it with solder. It can then be used the same as a Mason tooth.

Lastly the doctor demonstrated an original method of adapting backings to facings. An ordinary rubber block is used, with holes for the reception of the pins; the backing is placed on the tooth, which is then placed on the rubber block, the pins being inserted in the holes; another rubber block is placed on the porcelain and struck with a mallet until the desired adaptation is obtained. There is no danger of breaking the tooth by the force of the blow.

Report of Committee on Dr. Cruttenden's Cement Syringe. Dr. F. E. Moody, Chairman.

This was a clinic showing the operation of a cement syringe. The time occupied in the operation was as follows: For mixing the cement, 75 seconds; injecting it into the roots, 20 seconds; setting the crown, 30 seconds; cleaning instruments, 70 seconds; total, 3 minutes and 15 seconds. Upon careful examination we found the roots were filled thoroughly and the committee was very much surprised to see the way in which it could be done in such a short time. The working of the syringe is an excellent one. It has two advantages, that of saving time and filling the roots thoroughly. The committee report this a very successful operation.

Operation: Porcelain Bridge Work.—Dr. James O. Wells, Minneapolis (reported by himself).

I was on the program for a clinic in porcelain bridge work. In the limited time it would be impossible to construct a porcelain bridge, so I selected, as the next best thing, the construction of a bicuspid crown entirely from body.

This piece of work was partially completed. I did not have time to enamel the piece. I got the crown built, however, and it is downstairs with my other material. Those who did not see it this morning and desire to see it may do so later. As to the technic of the case, I prepared the root as I would for the ordinary gold-porcelain crown, and fitted the band as I would for that crown, but when I came to put the metal on the band to complete the cap, instead of putting it on in the ordinary way it was put in as a diaphragm, allowing the edge of the band to project toward the crown and form a socket, so to speak.

The end of the pin projecting toward the crown was split so that one part would go into the lingual cusp and the other into the buccal cusp.

The body was applied in the ordinary manner, namely, by applying a small bit and jarring the piece so that the particles of body will assume a compact condition and the mixing fluid brought to the surface, which was blotted off and the piece allowed to dry and placed in the furnace.

After the first baking, there was considerable shrinkage, due, I think, to the coarse texture of the body. I then applied the second coating; for the shrinkage, ordinarily, we will find two coats sufficient. If you have shrinkage with the second coat repeat the operation until the desired contour is obtained.

The enamel is then applied. By mixing the colors it is possible to obtain any shade desired.

Operation: Solderless Attachment of Facings in Crown and Bridge Work.—Dr. C. S. Talbert, Minneapolis. Reported by Dr. J. W. Penberthy.

The facing is prepared by beveling the four sides after having ground to proper shape and size.

A lug or supplementary backing is made, corresponding in shape and size with the facing and of such thickness as may be necessary to make the desired crown or dummy. This lug is made of any suitable metal, preferably gold, or may be made of a silver alloy and covered with gold solder. Pin holes are drilled in the lug to receive the facing pins. A piece of 36 gold plate is then soldered on the lug and pin holes punched through into the holes in the lug.

The facing is then placed in position and the gold plate is burnished to same, forming a box. Suitable cusps are then struck up and soldered on. The facings are cemented in after the piece has been finished, so have not been subjected to heat.

Dr. Talbert also gave a clinic in extracting live pulps with cocaine. He used cocaine crystals and vapocaine, under pressure. He saturated a bit of spunk with vapocaine, then took up with it a small amount of the crystals and placed them directly on the pulp, then placed a piece of soft vulcanite over the spunk and applied pressure. After two or three minutes the pulps were extracted without pain. In one case where there was no exposure the third application was necessary before the entire pulp could be extracted.

OPERATION: QUICK SETTING ALLOY.—Dr. E. C. French, Eau Claire, Wis. Reported by Dr. Mary V. Hartzell.

The one was an upper first bicuspid with a very large step cavity, and margins were found to be buccal and lingual. The large ones were treated first with hand instruments and then with burs, until there was a strong seat in the cavity and then the cavity was filled with Sibley's alloy. It set very rapidly and the patient went away immediately.

The next one was a lower first molar on the right side, a mesiodistal and crown cavity. Both the mesial and distal cavities were cut out and there was a matrix attached to the distal cavity, which was much larger, and the amalgam inserted. The amalgam hardened very rapidly; it was forced into place by pressure. There was no matrix used on the mesial cavities, but that was forced in in the same way, the filling was finished very rapidly and by the time the patient went away you could scarcely cut it with a hand instrument. It made a very handsome operation.

OPERATION: PRACTICAL EXHIBITION OF THE ADMINISTRATION OF NITROUS OXIDE GAS AND OXYGEN FOR DENTAL SURGICAL OPERATIONS.—Dr. R. H. Cullum, St. Paul. Reported by Dr. Geo. S. Todd.

I heard that Dr. Cullum had another clinic this morning which I did not see, and as to the second administration of the gas I can say nothing about. It is what he claims to be a mixture of oxygen and nitrous oxide. With the two operations he had two gasometers so arranged that they were equally balanced, that a greater amount of oxygen could not get into the gasometer than enters into the nitrous oxide gasometer, and so they always combine equally, just as the regulator he has sets it. He claims that this combining of the two gases is superior to any other anesthetic in that it does away with any muscular twitchings. He administered an anesthetic to remove a lower first molar, and as all of us are familiar with nitrous oxide I could not see any difference in the administration of his combination and nitrous oxide, the only difference being that the patient did not turn as dark in the face as with nitrous oxide, but the muscular twitchings are something I hardly ever have with nitrous oxide to the extent he had them yesterday. In the case this morning they were attempting to remove some roots, but they did not succeed in getting the roots the first time on account of the short period of anesthesia and the pugilistic maneuvers of patient, so he administered it the second time and there was as much twitching as there was yesterday. I could not see that it was preferable to nitrous oxide. Unless it shows more improvement I should not want to invest $100 in preference to the gasometer I have in my office.

OPERATION: GOLD FILLING (Proximal).—Dr. S. R. Holden, Duluth. Reported by Dr. J. M. Walls.

Dr. Holden prepared a cavity in the mesio-occlusal surface and opened two bicuspids, found the pulp exposed, which was extirpated. He filled the root with gutta-percha and filled the tooth with cement, not being able to fill the tooth with gold on account of lack of time. The preparation of the cavity was very excellent.

OPERATION: A NEW ANCHORAGE FOR GOLD FILLINGS IN CENTRALS AND LATERALS.—Dr. M. P. Goodwin, Operator, Clear Lake, Wis. Reported by Dr. J. W. Penberthy.

I will say that I do not know that there is very much I can tell you about this clinic. He prepared what he called a retention brace for the cavity, taking for it 18 k. solder. It is bent in such a way as to form a loop in the cavity, one end being in the base of the cavity, the other in the incisal end. The filling material is well condensed at either end and underneath the loop. That is about all I can say in regard to that clinic, except that the filling was apparently well retained.

DENTAL SURGEONS IN THE ARMY.

The following was passed by the Minnesota State Dental Association at its last meeting:

Whereas, there is now pending before Congress a bill providing for dental surgeons in the army, and whereas, the present neglected condition of the soldier's mouth is deplorable and inhumane, and whereas, the suffering soldier is unfitted for duty, thus reducing the personnel of the company, brigade, etc., and whereas, this neglected condition, unchecked for two or three years, disqualifies him from re-enlistment, thus losing from the government (except through pension) an otherwise efficient soldier on whom it has spent much time and money; therefore,

Be it resolved, that the Minnesota State Dental Association believes it would be both humane and economical for the government to provide dental surgeons for its soldiers that their service might be more effective and their term of enlistment prolonged, and,

Be it further resolved, that a copy of these resolutions be sent to those whose influence may bring about the passage of said bill.

[The bill has passed and gone into effect.—Editor.]

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, March 5, 1901, with the President, Dr. George W. Cook, in the Chair.

Dr. Edward C. Kirk, Editor of the *Dental Cosmos*, Philadelphia, read a paper entitled "The Educational Outlook of Dentistry."

DISCUSSION.

The discussion was opened by Dr. C. N. Johnson, who said: I should first like the privilege of extending my thanks publicly to Dr. Kirk for coming here and reading this paper. I have already extended them to him personally. It is a compliment to the society to have a gentleman come such a long distance and read such an excellent paper. The paper is almost too broad and too deep to call out a very extended discussion on the impulse of the moment. However, in the early part of the paper the essayist drew a distinction between general medical practice and the practice of dentistry when he intimated that the difference between the two was mostly one of mechanics, and it occurred to me at the time that probably in the teaching of dentistry we have ignored too much this matter of mechanics. I can remember very well when I was a student and following the days of my studentship that a certain class of teachers, a certain class of practitioners, and a certain class of essayists made the claim that we were following mechanical dentistry almost to the exclusion of scientific dentistry. It may be true that we did ignore scientific dentistry, but I must say we did seriously and are seriously ignoring the mechanical features of dentistry. It is one thing that we must recognize. Mechanics do enter into dentistry, and it is almost the one dividing line between general medical practice and the practice of dentistry. In that connection I think it was a fortunate move for dentistry that dental colleges were organized because I do not believe, and particularly in the light of recent events, that the average medical college was so equipped, or would have become equipped sufficiently to give dental students the needed mechanical training. There is another thought in connection with dental education. We are sometimes discouraged when we study the advance of dental education. But let us study another feature of it; let us look at the condition of dental education in the early days and then see what it is to-day. Although the essayist did not express it, I believe it is his conviction that dental education has advanced more rapidly and met the demands of the people more promptly than medical education; that to-day the dental degree means more for dentistry in relation to our services to humanity than does the medical degree mean to the medical man in his service to humanity.

In the early days of dental education, when the first colleges were organized, there were few chairs in those colleges; there were few departments of dentistry being taught. I am not familiar enough with the history of those colleges to state how many professors there were in the first dental college, but the difference between the colleges then and now is very great. To my mind it is very encouraging to note what progress has been made in dentistry, because there have been such a rapid development and growth in such a short time. I do not want to take up much more of the Society's time, but I desire to refer to one other feature.

That phrase, "The Badge of Partial Culture," has stuck to me ever since I first heard it, and sometimes I have been afraid possibly it was an apt phrase used in connection with dentistry or the dental degree. But I think with the essayist to-night, that that cannot be truly said of the dental degree to-day when it is obtained from the best dental colleges.

There is another feature of this subject of dental education that has not been touched upon that I want to refer to briefly, because it is a feature that has appealed to me ever since I began to study dentistry or to be associated with dentists or with college work. I believe we are essentially weak in our preliminary requirements for dental education. (Applause.) I tell you, gentlemen, those of you who are not familiar with college work have very little realization of what that means. I say fearlessly that there are men in this country to-day expending the best energies of their lives in trying to teach advanced dentistry to men who are not qualified to accept that teaching. I deplore more and more the fact that men are admitted to our colleges to study dentistry who are not qualified to study any profession. It is along that line I want to make one urgent request, that dental educators have this one thing in mind, that we are always laying ourselves open to that old phrase, "The Badge of Partial Culture," until we get a different class of men to whom to teach dentistry. When we can do that, I will tell you, gentlemen, that I have very little apology to make for the present condition of dental education in this country. I believe that our dental colleges have advanced in relation to teaching men those things by which they may benefit humanity, and, as I have said before, I believe the dental colleges have advanced more rapidly than the medical colleges. Medical science has advanced undoubtedly, but I believe to-day, taking the four years' course in medicine, and the three years' course in dentistry, we prepare our students to practice more intelligently the department of dental surgery upon the public than do the medical colleges teach the general practice of medicine when they give the M. D. degree to men after four years' study.

Dr. J. N. Crouse: I might perhaps be better able to discuss this paper if I had been given an opportunity to see it a few hours at least before the meeting. I regard Dr. Kirk's effort as an admirable one, and can heartily endorse all the propositions laid down by him. Dentistry, provided a man is successful, is one of the most taxing occupations that can be followed, and I have always maintained that a dentist should possess unusual ability and a first-class education before he enters college. I once studied medicine, but gave it up because there was so much guess-work and humbug about it. Some of the physicians who are most successful financially know the least about medicine, and I have always said that a man could follow that profession successfully without much knowledge of it, simply because the majority of people who consult physicians do not need their services at all. This is not so with dentistry, for when a patient calls upon us for relief he has some real and not fancied ailment. I was glad to hear Dr. Johnson, an educator, state that he thought many students should be turned away from dentistry because of unfitness, that is, that they should be weeded out before they entered school and not afterward.

Dr. G. V. Black: I have been particularly interested in listening to Dr. Kirk's excellent paper. It is a line of thought that I am glad to see stirred and it seems to me it is a line of thought that has not been sufficiently stirred in the past. I am apt to think recently that members of the profession, who are not closely watching the progress in the dental schools and the work that is being done by them, fail to understand the difficulties the men who are laboring in the schools are grappling with, something of which was indicated by Dr. Johnson this evening. Now, I do not wish to digress from the paper, but I do wish to say a word about this first. It is not, however, foreign to the thought of the paper. Students are sent to us, and practically the profession demands of us to take them, who are not prepared to go on with the work as they should. Am I not right, Dr. Johnson?

Dr. Johnson: That is true.

Dr. Black (resuming): The difficulty is not so much with the dental colleges as it is with the profession. What do these pupils lack? In the first place, they lack that broad knowledge of language which is essential to them, in order that they may understand the terms in which the essentials of human anatomy is expressed, or human physiology, or histology, or pathology. It requires a good knowledge of language for students to be able to study these subjects intelligently, or to listen to lectures profitably.

The next thing our students lack most is a knowledge of physics or of mechanics, if I may so term it. Students should come to us with a broad scientific knowledge of physics as a basis upon which to found their knowledge of the mechanics of dentistry. It has been said by Dr. Kirk, also by Dr. Johnson, that practically our specialties in medicine are founded upon mechanics; it is founded upon what men do with the fingers, with their ears, with their eyes. If a man makes a specialty of diseases of the chest, his superiority in diagnosis depends largely upon the training of the ear in differentiating sounds, and it is upon this that the division is based, and not upon his knowledge of the fundamentals of medicine. So with the dentist. The excuse for our specialty, if I may so express it, is dependent upon what a man does with his fingers, not that there shall be any difference in his understanding of the fundamentals of medicine. Then, again, to be successful, he needs the same training in the social affairs of men—yes, more. The student of dentistry needs more in that line than does the student of general medicine. Why? Because he is literally confined to his office; he does not go among the people as a physician does: he is in a degree debarred from the general observation of social customs by the nature of his employment, consequently his education in that line should be guarded carefully before he enters practice in order to enable him to carry on his work in the management of people as he should. Our students should come to us with a good knowledge of human nature, of social affairs. The man, as Dr. Crouse said, who can take a family of little children, whose nerves stick out, so to speak, like the quills of a fretful porcupine, soothe them, carry them through painful operations, needs to be a good student of humanity, or of human nature to begin with. An illustration of that came to me to-day. A student of the infirmary came to me and said he had a patient upon whom he could not use the rubber dam. I saw that it was simply a question of understanding how to manage his patient. In a few moments I was enabled to adjust the rubber dam, the patient was feeling comfortable, and had really forgotten that she could not bear the rubber dam. These things come from a study of men and of women. Our students are sent to us without this kind of training.

The development of dentistry has been wonderfully rapid, but has not occurred in a day. I would like to hold in my hand a little book Dr. Kirk showed me to-day. It is printed in quaint old German; it was printed only a few years after the discovery of America. It has some quaint thoughts in it, and along with Dr. Kirk I have been looking over some of those thoughts to-day. One of the curious things in this little book is that I have found the German word zahn (tooth) spelled in four different ways on one page, and yet in it I find this sentence, which I will not attempt to translate literally: "Caries of the teeth is caused by lodgments about them becoming foul, and this foulness begets a sharp moisture (scharfe feuchtikeit) that eats away the teeth." We recognize in this sentence the intention to express that for which we would use the word acid nowadays. In another place the author speaks of filling teeth with gold leaf, as though it was a matter well understood at that time, and the paragraph is a quotation from a man who had written at a time preceding the writing of this book. The first quotation I made is the one I want to call your attention to particularly. Here is the idea so quaintly expressed also by Robertson at the beginning of this century: "The teeth decay because of the fermentation of lodgments at a particular point, producing an acid that eats away the teeth." The same thing again. That was repeated by Dr. Watt over and over in this country, and yet there are so few of the dental profession even to-day who realize it. That is what troubles me—this slowness of the grafting of thought upon thought. Those thoughts never die; this one is just as true to-day as when it was written in this book or when Robertson spoke of it. Miller has only explained how that acid formation has taken place. He has added another fact. Desirabode remarked that if caries is caused by an acid, as Robertson speaks of it, the teeth would decay all over. How many realize that fact, yet it was spoken seventy-five years ago.

We want more men in the dental profession who can understand the meaning of sentences, men who can take in the whole gist of what a sentence means, if it has definite meaning, men who can read and understand fully the meaning of what they read. But more than that. We need more men who will understand the value of a fact. That is one of the greatest difficulties under which we labor, namely, the proper appreciation of the value of a fact, and that fact after fact woven together make science. The best of us will interpret facts wrongly, but other facts will be developed alongside of them and correct or modify our interpretation, and by correcting our interpretation we make progress.

I want to say a word or two in regard to the four years' course in dentistry spoken of by Dr. Kirk. Do we want a four years' course? I think we do, because it fits students better to practice dentistry. If a medical man is to become a surgeon, he takes a special course of study after graduation. If a man should adopt the specialty of diseases of the eye, he makes that a special study. If medical men adopt any specialty in medicine, they take further studies. They devote themselves particularly to the specialties they adopt. A man who has graduated in medicine is not prepared for the various fields of work, and I do not think he is recognized to-day as being thoroughly competent to practice every branch of medicine. After he has graduated, he is ready to prepare himself for his specialty. On the other hand, the dentist is supposed to have obtained an education when he graduates, and to have prepared himself for his specialty. He has not only gotten the foundation upon which his future profession should rest, but he has attained that manipulative finger-work also. I have a strong feeling that three years is not enough; that there are certain studies which should be added to our curriculum, and one, which is not the least of these, is the study of applied physics in dentistry. There are several laboratory courses that must be added. We must have a laboratory course especially of applied chemistry in dentistry. There are studies in progress that will lead the dental profession into the greatest minuteness of physiological chemistry. The paper that was read at the meeting of the International Dental Congress in Paris by Dr. Micheals shows plainly that the dentist must in the future study the secretions, the blood, the fluids of the body, if he is going to keep up with the procession. We must have in our curriculum a physiological laboratory course. The bacteriological laboratory course must be extended, and when we have placed in the curriculum that which we now see we need, four years will be a very short term.

Dr. Truman W. Brophy: I desire, first, to repeat the remarks that have been made by the gentlemen who have preceded me, expressing my appreciation of the presence of Dr. Kirk among us, thanking him for his paper, which I regard as a most excellent one, and which I believe presents the most advanced thought of the men who have most deeply considered the subject of dental education. The trend of educational institutions to-day—universities, colleges, academies, normal schools, high schools, and the whole public school system—is to place education as nearly as possible upon a utilitarian foundation. The curricula have been changed with this object in view. To-day we find schools of technology planning a course of study so as to bring students up to a high standard of usefulness, making it possible for those who attend them to prepare themselves for some vocation in life, so that they may successfully discharge their duties. All education, in a measure, is broadening, and its breadth is reaching out and gathering such branches of learning as will make men more useful in the performance of their duties to their fellow-men.

A week ago to-day I was in the City of Toronto, and there I saw an exhibition by Dr. Price, of Cleveland, Ohio, of work that he had executed on the pathology of the oral cavity, exhibited by the aid of the stereopticon and presenting the results of his X-ray work. It was intensely interesting. It brought to our view the conditions as we know they exist, but never before was it my privilege to see outlined upon the screen beautiful pictures in which pulp nodules were shown distinctly within the pulp canals of teeth, also excementosis upon the roots of the teeth, outlining curvatures of the canals that we know exist, but never had I the opportunity to see them so beautifully outlined. He also showed broaches that were broken off in the canals, and openings through the sides of the roots of teeth. He showed the absorption of bone in cases of pericementitis, pyorrhoea alveolaris, destruction of the tissues, etc. Dr. Price held the attention of every member for nearly two hours. Every one was intensely interested in the subject. How much of this work is known in the general field of medicine? What is the curriculum of medicine for the best regulated schools, and what have they done in this department of pathology? How many physicians administer drugs for the relief of neuralgia without avail, when the true origin of the disturbance can in many instances be located by the dentist? This is a field of work that is being done by the schools of dentistry to-day as the outgrowth of a want. We have reached it by a process of evolution. It has been said that nothing can be perpetuated which is not wanted.

In 1888 there were in the United States seventeen hundred students of dentistry; to-day there are perhaps eight times that many. They would not be increasing in numbers if they were not wanted. Whoever attempts to measure the present curriculum with that which existed eight years ago would be making an improper estimate of what is going on now and that eight or ten years hence will be far in advance of that which exists to-day, and I believe the ratio of development will be far greater than it is to-day.

I am pleased with the remarks that have been made on the growth of educational work, on the broadening of the curriculum, on adding other branches, and in teaching laboratory work. Another department which will be added to our curriculum (and I have made this statement before) will be the department of physical diagnosis, which must eventually come. A degree is not in all instances an evidence of any special qualification. During my short stay in Toronto I met the recognized leading surgeon of Canada—Cameron is his name; but he positively refuses to be addressed in any other way than Mr. Cameron. He is not a doctor of medicine. He has qualified himself as a surgeon, but by no means does he possess the degree of M. D., and he is not entitled to the name of doctor. When I say doctor, I do not mean physician, but I mean doctor in its true and its broadest sense. A doctor is necessarily an educated man as the name implies from the original.

I have nothing more to say except that the future of dental education is secure. It has worked its way through difficulties, through all sorts of adversity, up to its present state, and any man who is acquainted with what has been going on the last few years in the organization of dental faculties must know that we are making advancement as fast, if not faster, than the other professions. The educational requirements for admission are being raised from year to year and the course must be extended from three to four years. For my part, I feel proud indeed of the improvements and of the changes and of the broadening of the curriculum and the fact that we are rapidly advancing, and as our institutions increase in strength and in usefulness the world will recognize them and place them exactly where they belong. In this connection I am reminded of a remark which was made by the late Professor Garretson at a meeting several years ago. Some one was worrying whether or not he would get the recognition to which he was entitled. Professor Garretson said if Mr. Vanderbilt were to go out and hire theatres and halls in the various cities of the countries and lecture to the people on how he succeeded and became rich, what would be the opinion of the world of him? It is not necessary for a body of men to go around and appeal to others to be recognized. It will be recognized for exactly what it is worth. Every man takes a place in a community; every profession takes its place among the professions of the world for exactly what it is worth. They are all placed where they belong. They will be placed where they belong. The world will give the dental profession credit for accomplishing what it has accomplished.

Dr. A. W. Harlan: The subject of Dr. Kirk's paper on "The Educational Outlook of Dentistry," is an interesting one. As I have not had the privilege of reading it in advance, I have not very much to say. It seems to me, in considering the question of the educational outlook for dentistry, that we are trying to move too rapidly. The professional education of dentists as dentists does not date back a hundred years, while the professional education of physicians and surgeons dates back much longer, and according to the essayist the curriculum of the dental school at the present time fits the graduate for practicing his profession much better than the four years' course fits the practitioner for the general practice of medicine. I think we have no cause for blaming the present dental educational system as a system for not doing what it promises, or what it purports to do. It is true that we have no endowed chairs in our dental colleges; we have no fellowships in dental science; we have no encouragement for individual workers, so that they may pursue their work without any thought of obtaining a livelihood, but we do have those things in quite a number of medical colleges. So I consider the statement the essayist has made is rather gratifying than otherwise of the status of dental education as it is now.

A little while ago, in considering the question of what a dentist should be, or what he did from day to day, it occurred to me to make a comparison between the work of a great civil engineer, we will say, with that of a great dentist. I thought to myself: What is it that the dentist does every day that will compare with the construction of a bridge that crosses a stream, which may be dangerous to traverse, and over which a structure is erected that will carry passengers, freight and anything that such a structure should carry? What does the dentist do now as compared with what he did forty or fifty years ago? At that time he was mostly engaged in filling teeth with noncohesive gold and amalgam, and in extracting teeth. Fifty years ago he was making metal plates to carry artificial teeth. To-day he is filling teeth, making all kinds of plates; he is making bridges and crowns, is treating diseases of the teeth, of the gums and mucous membrane; in fact, he is becoming more and more every day a dental physician and dental surgeon, and while it may seem a small thing in itself, yet his services to the community at large are equal to, if not greater than, the services of the great civil engineer who builds a large bridge simply from his knowledge of physics and mechanics, which is one of the elementary principles of the beginning of a dental student's life. The civil engineer works on that one thought and that one idea; he constructs a bridge, or he builds, for instance, the Masonic Temple or the Schiller Building on a single idea, and the dentist of to-day not only has that as one of the integral parts in beginning his student life, but he has everything else connected with medicine and dentistry, and in three years he is better fitted to cope with all the difficulties that confront him than is the medical graduate when he begins his professional life. Still we talk about the inadequacy and inefficacy of our system of dental education, which does not go back much more than sixty years. There are men in this room who have lived more than sixty years, and in that short time in the United States of America we have nearly thirty thousand men, more or less, engaged in the practice of dentistry, and in that short period there have arisen forty or fifty institutions devoted to the teaching of men to engage in this profession that we are talking about to-night, and the years that have passed since they began to teach men in the art of building bridges, structures, etc., dates back a thousand years or more, and it is only within the last twenty-five years that our edifices have been built up that have excited the admiration of the world. We have cause to congratulate ourselves on the rapid development and the great growth and the immense acquisition of knowledge that this profession has attained in such a short period, and I do not feel like saying to you that you are a set of ignoramuses, because I know you are not. We have practically no past. Our past is so little, so short and so close, and we have accomplished so much in that period, that we have great cause for congratulation on the fact that we can say to ourselves that the educational outlook for dentistry is very bright, and that we have a still greater future before us. We are, so to speak, just in the swaddling clothes of our infancy, and pretty soon we will establish laboratories and places for experiments, etc., and then we will be able to show in a more perfect manner than we have in the past what we can accomplish. I know for one that the college with which I am connected will establish three or four laboratories in the next year, devoted especially to the cultivation and dissemination and acquisition of a scientific knowledge which, up to the present time, has not been cultivated anywhere, and I am sure that every educational institution in this country will not only adopt but perhaps surpass the work that is to be done by following in the same line. As I sat here and listened to the speeches that were made by Drs. Johnson, Crouse, Brophy and Black, especially Black, and reviewed in my own mind something of the history of dentistry, with which I am somewhat familiar, I thought to myself that most of you have not come here for nothing. There are men here to-night whom I have not seen for months, and some of them not for years. I am glad they are here and have heard this admirable paper. Dr. Kirk did not say expressly certain things with reference to the educational outlook, but his paper showed that he has studied the past and things that have already transpired, and from them he argued a glorious future for this profession which we are so delighted to be members of, and to-night I feel proud to think that I am enrolled in this army of progress, and I hope you will all be stimulated by the paper that has been presented.

DR. A. E. BALDWIN: Like the rest of the members, I have been very much interested in Dr. Kirk's paper and in the future of our profession. I have enjoyed the paper in what it has said and in what it has not said. Of course, Dr. Kirk could not cover such a great field as the title of his paper indicates in any one evening. I have also been interested in the praise meeting that has been held since. This is the most self-satisfied audience I have ever seen. About the harshest criticism I can make of our specialty to-day, and I say specialty emphatically, is that we are narrow. Whatever we may claim, we cannot escape from the fact that we are engaged in a specialty of medicine. Some have hesitated a long time about calling us specialists, but it does not make any difference whether we call it a specialty or not, because a dog is a dog if you call it a cat. The greatest indication of the narrowness of our specialty is the fact that we are puffed up by the little knowledge we possess, as has been evidenced by the discussion to-night in sandbagging the general medical practitioner because of his general ignorance. I have been a member of medical societies for years and have attended many of their meetings, and I must confess that I have never heard as much said derogatory of any branch thereof as I have heard directly and indirectly to-night from our members of the general medical practitioner. How many departments of the human frame does the medical practitioner know a great deal more about than we do? The fact that we are self-satisfied is not, in my opinion, an indication of progress. The man who thinks he knows about all that is necessary to know is not making rapid strides in progress. He is not in a receptive mood. While the most of those who have talked here to-night are teachers in dental colleges, or are deans or superintendents connected with the educational interests of our specialty, yet possibly they may occupy positions where they are somewhat blinded as to the progress that is *actually* being made, so far as many departments of our specialty are concerned. We have evidences of greatness in men who have not had the benefits of our modern dental schools or of medical colleges. They have left monuments of their greatness with us in the shape of grand work, showing that greatness has not come within the last thirty or fifty years. The fact that dental education to-day is broader than it was ten years ago, and that ten years ago it was broader than it was twenty years ago, is a gratifying indication of progress. But I tell you, gentlemen, that the thing to do is not to try to feel that the position we occupy is pre-eminently a high one as compared with the other professional men of the world. An eminent educator, in an article on education, said in his peroration that "A man must know a great deal in order to know how little he knows." It seems to me, from that description, we know very little.

Dr. Black showed us from an excerpt taken from a little book published four or five centuries ago that the germ of the modern idea so-called was present then, and that we have developed—at least we think so—but we do not know any more than the fellow of a hundred years ago *thought he* knew. We say we *know; he* said he knew, but were he living to-day he would know he was mistaken. May we not be mistaken in many things which we now claim to know? I do not want to say anything which will detract from an appreciation of the progress in dental education, but I do not believe that any man, however insignificant he is, and however insignificant the school he may have obtained his medical degree from may be, is any worse practitioner of our specialty for having the medical degree. On the other hand, I believe anything which teaches us truths about the human frame, about remedies and how to use them, is broadening and beneficial to us in our specialty. Dr. Crouse is not the only man who studied medicine for one year and became dissatisfied. I myself knew much more when I had been to school a year or so than I do now. So I am not surprised to hear what he has said. Our schools, dental and medical, should be simply preparatory institutions, preparing us to *begin* our studies when we step *from* the college portals. I am free to say, regretfully too, that I do not believe the average dental graduate begins his student life when he leaves the college portals, as is evidenced by some of the remarks that have been made to-night. I have never heard our medical friends claim that the dental specialist did not know more about the mouth and teeth than they did. I am acquainted with some very eminent medical men, and when it comes to the consideration and discussion of dental subjects they willingly give way to the dental expert. I think it would be good grace, and it would show courtesy and intelligence on our part, if we spent our time at our monthly meetings in doing something else than in complimenting one another on what we think we know more than the general practitioner. I do not think any of us will ever be too well prepared in any branch of our calling. I do not think Dr. Crouse is, although he is a man of ability, and I think any man in any professional occupation will die learning if he does his duty. But if we are self-satisfied, then we will not make any progress. So I think it is just as well to look at our shortcomings as to pat ourselves on the back so much. We have accomplished very little in comparison with what we should accomplish. I do not think there is any special cause for finding fault with the lack of proper preliminary education among the students in our special schools except by those who are teaching and instructing these students. It is no fault of ours, and I do not know whose fault it is unless it is theirs. If they are teaching a lot of students they ought not to teach, they can easily remedy it by insisting on a proper preliminary education. I do not say this unkindly. I, for one, would glory in the day when the dental colleges insist on a proper preliminary education qualification. I think we ought to have a special course of training in our dental colleges for teaching the students *manhood, honesty* and *integrity* just as well as the other more common branches. The time should come when we as specialists should realize not only our worth, but our lacks as well. I have known many dentists, who are practicing in our city, who take but one dental journal, and they tell me that they do not read that. It may be that there are some medical men who do the same, but I think one who does this kind of studying I have just mentioned is not progressing; he is not in the twentieth century band-wagon, and particularly in the band-wagon Dr. Kirk intends the profession to occupy this coming century, and we all hope it will occupy.

Dr. Kirk (closing the discussion): I want to thank the members of the society for their appreciative words concerning my paper, though from the trend of the discussion I fear that perhaps I did not make the motive of the matter sufficiently clear. I regret very much to see the tendency to draw invidious comparisons between the attainments of the medical practitioner and those of the dental practitioner. That has nothing to do with my subject, so far as I can see. I endeavored to say something about the educational outlook in dentistry, for the reason, as perhaps some of you will recollect very distinctly, that for years the dental profession has been agitating the question as to whether dentistry is a specialty of medicine or a separate and distinct profession. I am committed in my mind to the proposition and the belief that dentistry is *de facto* a specialty of medicine. I quite agree with Dr. Baldwin's position, that we cannot, as a matter of fact, regard it in any other light. Then comes the educational question which has agitated the minds of many of us, How shall we produce the practitioners of this specialty? What I endeavored to bring out in the paper was that the study of the whole of medicine is not, in my judgment, necessary to fit a practitioner for the practice of one of the departments of medicine. There are certain fundamental or elementary subjects (I am not prepared to say how many, as that is a matter of detail for very careful consideration) that relate to this specialty and to every other specialty of the healing art. The student must have a foundation upon which to base his special knowledge. He must know the structure of the human body; he must know its chemical composition; he must know the functioning of that body and all that relates to its functioning, both normal and abnormal. Every study that relates to these several propositions must be included as fundamental to the practice of any department of the healing art. Any one who is even superficially acquainted with the field of scientific medical research must be astounded at the marvelous growth and development that have taken place in all parts of it. There is no special department of the great healing art that has not felt the stimulating influence which has come with modern methods of study. I am not at all sure that dentistry has kept pace with the scientific developments in other departments of the healing art. There is a gentleman very close to me at this moment (Dr. Black) with whom I discussed one phase of this subject some two years ago. I was speaking at that time of the necessity for better and more scientific investigation in dentistry, and by that I mean not so much what we do for the development of methods in our art, but the knowledge of why we do it and how we understand it, or, in other words, what we know about the scientific side of it. Crowns and bridges were made many years before we even dreamed of modern crown and bridge work. Practitioners before the middle ages filled teeth with gold and did many of the ordinary operations about the mouth; but to-day we are searching out the reasons for these things. In discussing with Dr. Black the necessity for scientific investigation in dentistry, he delivered himself of this opinion: "We have only barely scratched the surface of things." I felt the truth of that statement very strongly; we have simply gotten a foretaste of what scientific dentistry will be. I do not know that we have so much cause to congratulate ourselves for the advancement we have made, because rapid progress has been made in all other branches of the healing art. But there has been a steady and rapid growth all along the line, and if dentistry has partaken of it, I am glad. I tried to bring out the point that the sum-total of medical knowledge is so great and it has spread out so broadly that it is absolutely beyond the power of any individual to adequately comprehend the total of it either in its science or art, and there must come a point where readjustment of medical education will take place with reference to this development. It will have to be reorganized. It seems to me true, that the accepted curriculum in medical study has been long outgrown by the developments of medical science, and that point was brought out very clearly in my paper by the quotation from President Eliot, of Harvard, who holds that the limitations of the present curriculum are artificial and they are not adapted to the needs of education. The shortcomings of the present medical educational scheme with reference to the science and art which it professes to cover, and which it does not cover, should be recognized and corrected.

When I spoke of the outlook in dentistry I tried to trace the historical growth of knowledge in medicine and the relation of this to medical education, and similarly the development which has taken place in dentistry, and I wanted to show that when the proper readjustment of medical education is brought about the natural evolutionary process, so to speak, in dentistry, as well as in other departments of the healing art, would adapt dentistry to medicine by fitting it in its proper place.

Finally, I appreciate very fully all the kind things that have been said regarding my paper, and I assure you that I have had as much pleasure as any of you have had in attending this meeting and in bringing out this discussion.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S

DR. HENRY J. B. McKELLOPS.

The passing away of Dr. McKellops at the age of seventy-eight is what might have been looked for at his time of life. It is always a source of profound sorrow, however, to the survivors to lose a friend, no matter what his age may be. Dr. McKellops had always been so youthful in actions and words and movements for so many years that we who were his juniors by many years counted him as one of us, and will continue to mourn his loss as personal. We were among others of a large number well acquainted with him and his professional life for the thirty years last past, and it was a rare thing indeed to miss his face from the meetings of the Illinois, Mississippi Valley, Missouri, the American and the Southern and the numerous midwinter meetings of the past years. Dr. McKellops was not a writer; he was a good speaker and a good society man. He was always progressive, and there was nothing new or useful or valuable but what he took pains to purchase and learn all about it. He was always opposed to the use of amalgam, to the giving of certificates for washes and powders and pastes, or to certify that he had used an instrument or invention for fear some one might think himself duped if he purchased it on the recommendation and did not like it afterward. He thought things ought to be sold on their merits and that they should not be puffed or bolstered up by well-known names. He was a great clinician, and for many years was a star performer in clinics; lately, however, he only acted as director and supervisor. He was a lover of books, and secretly read them, but he did not talk about them afterward, or quote from them, except in the line of poetry. He was a great raconteur, and could always amuse and entertain the old and the young. He was a firm friend, and hated shams and pretenses and was always liberal to a fault. He had an innocent pride in the esteem in which he was held by our great men, and was always fond of extolling the virtues of those really deserving of that appellation. When Marshall H. Webb died he was one of the few who left his home to attend his obsequies, and we think now that he is gone that not many of the really expert operators of the past fifty years are left. Look at the names—Varney, Atkinson, Webb, Allport, Cushing, McKellops. There were others, but those above named gave lights of the greatest brilliance, and there are few places that can boast of such a galaxy of operative talent. We lay a tribute of profound respect to the memory of this inspiring man, who was always so ready to be friendly to the humblest in our ranks. We thought a few years ago that when Judd and Spalding passed away the city of St. Louis would not seem the same to us. When Eames, Morrison and Forbes departed the city did not seem the same, and now that McKellops is no more we will feel like a stranger making his first visit to a temple with new faces and new orators, and as we look around we will behold those who were his associates and then it will dawn upon us that McKellops is survived by other original men left behind, and in time their day and hour will come, and our grief will break out afresh as one by one they fall like the silent leaves of autumn. *Requiescat in pace.*

DOMESTIC CORRESPONDENCE.

FOREIGN RELATIONS COMMITTEE OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The Foreign Relations Committee, to whose jurisdiction has been referred all foreign educational matters affecting the interests of the National Association of Dental Faculties, has been in receipt of a great mass of correspondence concerning the status of the distinctive American dental degree in Europe, and the effect upon public opinion there of the almost open sale of diplomas issued by fraudulent and irregular schools in the State of Illinois, and their quasi-recognition by the Illinois State Board of Dental Examiners, who, it is charged, have admitted to the State dental examination and granted permits to practice to foreign possessors of these irregular degrees, in some instances after their having been in this country for less than a month.

At the last meeting of the National Association of Dental Faculties, upon the recommendation of the Foreign Relations Committee, the work of the suppression of the irregular and fraudulent schools was placed in the hands of the Committee on Law, but as the first-named committee is in constant communication with American and other dentists abroad, and with our own government and its officers in relation to the condition of the American degree in foreign countries, it has been deemed best at the suggestion of such correspondents to furnish our dental journals with abstracts from a few of these communications, that the profession in America may be made aware of the consequences resulting from the vicious character of some of the Illinois legislation. The first installment of this was furnished without comment to the principal journals for their April issues, and the following is in supplement to that. The committee is necessarily dependent upon our professional magazines for this courtesy, and it is glad to say that all have expressed a hearty willingness to aid in the good work to the extent of their power.

W. C. Barrett,
Chairman.

(Copy.)

United States Consulate at Munich,
February 25, 1901.

Dr. W. C. Barrett,
Chairman Foreign Relations Committee, National Association Dental Colleges.

Esteemed Sir: I have the honor to acknowledge your letter of the 9th inst. The work undertaken by me is to bring me no other reward than the restoration to honor and acceptance everywhere of the American degree in dentistry than which no other country merits better.

The report of the committee you sent I had read ere I prepared my last despatch sent to the government at home and here, and in my recent despatch mailed last week to Washington I supplied evidence against one of the supposed *suppressed*, institutions, the old "Academia Illinois;" the diploma dating from May 24, 1899, although obtained much later and issued by Dr. B. E. Winther and Dr. B. I. R. Ungelenk. Of the diploma as well as the notary's certificate (which is *printed,* as you will see, so that the notary only had to write in his own name) I hand you photographic copy herewith for further use. The whole case will, of course, be duly reported to you from Washington, and I think will undeceive you as to all parties of the nefarious traffic being in jail.

You will oblige me if you will kindly state the names of all the parties thus far arrested, and promptly have me informed of any new ones added to those jailed, as it is all important that we have these names registered here. Very respectfully,

(Signed) JAMES H. WORMAN,
Consul.

Enclosures:

1. Copy of diploma of Academia Illinois to Bosch.
   (Signed) DR. B. E. WINTHER, Pres., Prof. Op. Dent.
   B. I. R. UNGELENK Sec., Prof. of Chem.
2. Kreuker's certificate as notary.
3. Copy of letter from the police here.

CONSULAR SERVICE, U. S. A.,
MUNICH, GERMANY, Feb. 12, 1901.

DR. W. C. BARRETT,
208 Franklin St.,
Buffalo, N. Y.

Dear Sir: Just now a very peculiar case is up here and I am anxious to have your assistance at once. Under this date I write to the State Board of Illinois as per enclosed, also to the Secretary of the Board of Health of Illinois, addressing him at Springfield and requesting two copies of the Annual Report or of the law as amended for examinations by the State Board to be certified to by the Secretary of State *and the German Consul.* This is all important.

This Gumpoldt has *no* Roumanian degree and was in the U. S. only a few weeks, possibly only a few days. I know when he went and returned. He has a diploma from Weil and two certificates from the State Examining Board, as my letter to Reid discloses, both referring in date and contents, Weil having been the interpreter. Our German Consul in Chicago has notified the courts here that the Illinois Board is competent to grant such certificates and that signature of three makes it a bona fide certificate. The law requires annual meeting for the granting of licenses. Members of board can only grant temporary certificates, renewal necessary, and registration in County Clerk's office within six months,—all of which was *not* done.

Yours truly,
(Signed) J. H. WORMAN,
Consul

No. 48.

CONSULATE OF THE UNITED STATES OF AMERICA,
MUNICH, Germany, February 13, 1901.

HON. DAVID J. HILL,
Assistant Secretary of State, Washington, D. C.

Sir: Most respectfully referring to my despatch No. 38, under date of December 29, 1900, regarding the sale of dental degrees in Germany and to the preceding communications from this consulate to your department on the same subject, I have the honor to report further: . . .

(The first part of the consular despatch of Consul Worman of New York consists of a review of what has been previously reported concerning the "Academia Illinois" of Chicago and the "Wisconsin College of Dentistry" of Milwaukee, both of which have been suppressed, and of extracts from the report of the Foreign Relations Committee made at Omaha July, 1899, in which the enormity of the foreign diploma traffic on the part of certain Chicago institutions was fully set forth. This is omitted as having been substantially published before.)

The German dental journals have exposed and denounced the swindling institutions fraudulently issuing diplomas, but so indifferent are the German authorities to protect the dignity of American degrees that it is difficult to enlist them for prosecution that will restore American dental honors to the distinction to which they are entitled.

In 1897 the *Journal fur Zahnheilkunde*, XII Jahrgang, No. 42, reviewed a prospectus of the Academia Illinois which they had secured from Chicago and thoroughly exposed its illegal business and worthlessness of its diplomas. (A copy of this article and a translation are hereto annexed marked Exhibits J and K.)

(An exhibit to the same purpose marked L from the *Zahnarztliche Rundschau,* Berlin, July 15, 1900, page 6860, is also hereto annexed. A translation of the same is marked Exhibit L I.)

To what low estate American university training and honors have fallen in Germany on account of this disgraceful traffic is perhaps better apparent from these technical journals than from the manner in which the subject is treated by the secular press, and even by the comic journals.

Can any American of spirit sit idly by and see such disgraceful caricatures launched against educational enterprises, and that with justification by reason of such want of supervision on the part of so great and cultivated a State as Illinois, whose chief city, where this nefarious traffic centers, has a reputation to lose as well as to make second only to the metropolis of our great country?

(A cartoon from the *Lustige Blatter* showing a penny-in-the-slot diploma machine is hereto annexed, marked Exhibit M.)

This publicity has not always treated of the swindling institutions alone, but has very often generalized the whole subject, not only of American dental degrees, but all American educational honors, and has created in the minds, even of educated Germans, a prejudice against our institutions of learning which is as unfortunate as unjust, and is proving and will be still more in the future detrimental to American practitioners in Germany, and probably lead ultimately to the exclusion of American degrees in South Germany, like in the north, where their holders are practically denied the right to use or practice under them. (See Exhibits K 1, K 2.)

The courts of North Germany have had until recently much more to do with this question than those of the Southland and the manner in which they have commented upon our educational institutions, though largely due to want of understanding of the organization of these schools, has nevertheless reflected the general unfavorable opinions entertained here. Such expressions of eminent men could have but helped to strengthen and confirm the prejudices of those of lower estate.

It is simply a question of time, and that not so far away, when the courts of the Southland will re-echo these same unjust sentiments, if the flood-tide of public opinion is not promptly stemmed by discriminate and effective legislation at home. It will not do for the legislators of the State that has brought such disgrace upon our common country and good name to plead impairment of interests which have become incidentally vested under vicious legislations as a reason why no more effective measures have prevailed against the nefarious traffic and its disgraceful results.

The statement of Dr. W. C. Barrett, chairman of the Foreign Relations Committee of the National Association of Dental Faculties (see Exhibit 1½) that thus far the National Association of Dental Faculties has failed to carry through such legislation as the conditions exact is best supported by citation of court reports here.

A very recent expression from the criminal court of Breslau, although restricted to the "Academia Illinois," no doubt influenced a judgment rendered by the District Court of Nuremberg and caused a most indiscriminate and wholly unwarranted denunciation of the "Chicago College of Dental Surgery," one of the most reputable of American schools. (A copy of this decision and translation thereof are hereto annexed marked Exhibits M 1 and M 2.)

The judgment in Breslau was given in July, 1900, and probably the charter of the "Academia Illinois" had been revoked, but the court did not seem to care to discriminate between extinct and existing institutions.

An English rendering of the decision follows: The professors of the "Academia Illinois" were tradespeople, policemen, etc., who did a flourishing business by trafficking in diplomas in all professions, and sent their swindling advertisements to dentists abroad, unfortunately not always without success. One of the deans of these institutions was one Abert, sentenced to the penitentiary in Breslau, escaped to America and was there forced to undergo a prolonged treatment in a penitential "water cure."

What the Committee on Foreign Relations of the National Association of Dental Faculties said as far back as 1898 at Omaha, surely goes to the root of the matter.

Their report expressed the earnest hope "that as soon as the professional men of the State of Illinois are aroused from their lethargy and made to comprehend the enormity of the conditions, they will present the matter before the legislature in its proper light and the disgraceful law will be so amended that it will not apply to educational institutions and the charters already issued under it will be very promptly canceled."

It is evident from what has been heretofore said that this good work has not yet been accomplished.

As here truly said, however, the remedy lies at home, and I hope at a very early day to most respectfully submit some suggestions that will be practical as to procedure in Illinois, obtained as the result of the criminal trials and investigations by the Attorney-

General's office here, and perhaps also regarding diplomatic representations that seem to be called for to put an end to the prejudicial part taken in some of the cases by the Imperial German Consul in Chicago, or his subordinates in his name.

I have the honor to be, sir, your obedient servant,

(Signed) JAMES H. WORMAN,
United States Consul.

Exhibit E. TRANSLATION.

MUNICH, December 17, 1900.

TO THE CHIEF OF POLICE:

(In the matter of Franz Xavier Bosch, for using here the title of Doctor of Dental Surgery.)

In reply to your letter of the 24th ultimo, I beg leave to state that the "Academia Illinois" still has the right to issue dental diplomas, but is known to have abused such privileges and will not be permitted to exercise the privilege much longer.

The issuing of such diplomas is only permitted when the applicant has pursued a regular course of study of several years and has passed a formal examination.

Even under the most favorable circumstances a thoroughly qualified candidate would not be admitted to examination at one of our reputable dental colleges unless he had pursued his studies there for at least six months. According to the new regulations the candidate is admitted to examination only after eighteen months of study in the college where he wishes to graduate.

The institution in question is said to have issued diplomas to applicants on payment of a certain sum of money, who have not complied with these preliminary requirements, as has been proved at the trial of Emil Gumpoldt in the Criminal Court No. 2 at Munich on December 10, 1900.

The holders of diplomas like the one issued to Bosch cannot even practice in America.

Such diplomas are mainly used abroad to deceive a public unable to discriminate between such and those approved by the United States Commissioner of Education.

The American government is assiduously striving to suppress these spurious institutions.

There are only two still in existence, viz.:

1. The Cosmopolitan Post-graduate College of Dental Surgery at Chicago, and

2. The German-American Dental College, also at Chicago.

I, therefore, respectfully request you to have the diploma in question confiscated and transmitted to me, and vouch for its return. I desire to send it to the United States Commissioner of Education in order to furnish official evidence that such a spurious diploma was issued by the said institution. The Commissioner of Education would then be in a position to pronounce on the illegality of the diploma and to take steps to suppress the institution.

The anticipated reply of the State Department will be given without delay, since I have already called its attention to these swindling institutions and have had not only its approbation of my action in the matter, but have been instructed to co-operate in the settlement of this affair with the government here.

I have the honor to be, sir, your obedient servant,

(Signed) JAMES H. WORMAN,
United States Consul.

(Here follows as "Exhibit I" a copy of an article from the *Dental Cosmos* of July, 1900, page 700 of Vol. XLII under the title "A Slump in the Diploma Traffic.")

Exhibit K. TRANSLATION.

From the *Journal fur Zahnheilkunde,* 12th year, No. 42, 1897.

A CHAPTER ABOUT DOCTORS OF DENTAL SURGERY

For some time past eulogies of the latest swindling institution, the "Academia Illinois," have been circulating in Germany.

To-day accident has thrown into our hands a prospectus of this "institute." The swindling intent is so apparent in this circular that he must indeed be dumb who could fall into his hands.

At the same time we have received information from Chicago that the postmaster there has been instructed not to deliver letters and money remittances addressed to the "Academia Illinois," but to send them to the Dead Letter Office in Washington to be returned to the writers and senders, as, according to American law, the mails cannot be used for fraudulent purposes.

To avoid this prohibition this worthy crowd has pasted over the address of the "Academia Illinois" on the circular and given the address of a boarding house lodger who has no actual residence there, to enable them to continue the swindle and enhance the difficulties of the prosecution.

In order to escape the effect of the law of April 7, 1897, regarding the necessity in Prussia of ministerial permission to use a foreign doctor's degree, the president, whose signature appears on the circular, has the audacity to assume that this "rag" which he calls a diploma would be acknowledged in Prussia. (He calls himself in the circular "Magnificenz" and "Rector Magnificus.")

We have on the part of our society sent properly certified copies of this circular as well as the information received from Chicago about this swindling concern, to all proper officials to place a bar to the use of this diploma which the notarially certified documents from Chicago cannot and will not break through.

In the circular the president calls himself "Magnificenz" and names among the "founders" four victims, three in Germany and one in Brussels. We hope that these pilloried gentlemen will soon find out that they themselves have been swindled and will not lend themselves to the stool-pigeon service which is attributed to them in the circular.

The Right to the Title "American Dentist."

From the *Neuften Nachrichten,* Munich, February 6, 1901.

The dentist Emil Gumpoldt, who acquired the title of "american dentist" in America, advertised as such in several newspapers, and had a sign made bearing that title. December 10 of last year Gumpoldt had to appear in court to account for the title which he had no right to claim, and was sentenced to five days' arrest or a fine of $12.50.

The court of justice has taken the matter in hand, and the American Consul, Mr. J. H. Worman, was present at the transaction, as witness and competent judge. Mr. Worman asserts that the certificate which Gumpoldt received (from the Illinois State Board of Dental Examiners) and which he claims entitles him to "American dentist" is not genuine, as it should be signed by a board of examiners of five members. Gumpoldt's certificate shows but three signatures and is therefore only provisory or not valid. If the certificate were genuine and signed by the full number of censors it would pass for a "license of trade" and only entitle the holder to practice in the State of Illinois (where it was issued). The certificate bears the signature of the German Consul at Chicago—not as a competent judge however, but to confirm that the wording of the German copy is genuine. A diploma such as Gumpoldt pretends to possess Mr. Worman considers a fraud of individuals whose principal aim is to rob foreigners, and Gumpoldt claims to have become their victim, and his case should serve as a precedent to his colleagues.

The Consul states that such diplomas cannot be granted by law unless the student has lived in America a certain length of time, and has passed through a course of studies. Mr. Worman considers it his duty to oppose such frauds and has taken steps to insure the punishment of such swindlers by his government.

The testimony taken showed that Gumpoldt arrived in the City of Chicago in the spring of 1900, obtained a diploma and the degree of doctor of dental surgery from the "Cosmopolitan Post-Graduate Medical College," was admitted to and passed the examination of the "Illinois State Board of Dental Examiners," received a license to practice in the State of Illinois, and returned to Germany, leaving Munich after the middle of April and arriving back again early in June of the same year, having been gone but little more than four weeks. He had never previously pursued any course of dental study.

Exhibit L 1.

AMERICAN DOCTOR'S DIPLOMAS. BY DR. A. E. MILLER, OF CHICAGO.

By the *Zahnatzliche Rundschau*, Berlin, July 15, 1900.

The European and more especially the German dental press has, within the last few years, taken up the question of American diplomas and so much has been written about it, without giving any accurate statement of the conditions prevailing in America, that I am prompted to give an impartial elucidation of American college institutions.

The writer, after graduating from a high school, attended the universities of Berlin and Leipzig and was as student and teacher connected with colleges here, and may, therefore, be considered a competent judge.

The so-called dental colleges, dental schools, etc., are, as a rule, private enterprises, and, according to the will of the legislature, founded in the interest of science and humanity without yielding pecuniary profit to the managers. The words "incorporated under the laws of the State" does not mean that the institutions are State institutions, but that they have been founded like insurance companies, large hardware concerns, liquor enterprises, etc.

Therefore the doctor's degrees of the college here are not to be confounded with the State diplomas in Germany, but would rank with the apprentice certificates of any of the above-mentioned business concerns. There is this difference, however, while the State in the exercise of the police power does not concern itself as to whether apprentice certificates of hardware concerns are based on truth, and does not vouch for the qualification of their holders, it manifests an interest in those young people who have received a doctor's diploma and are desirous of practicing dentistry, to see that their diplomas do practically guarantee the qualification of the holders. Therefore there is in every State, a "State board of dental examiners" whose duty it is, in the interest of public health, to see that no unqualified persons are admitted to practice dentistry. This is carried out by subjecting all candidates to an examination, no matter whether they have attended a college or not. From this examination are only exempt such as are in possession of a doctor's diploma from institutions whose reputation warrants a thorough qualification of the respective holders of diplomas, and who have obtained their licenses to pursue the practice of dentistry by virtue of their diplomas.

IMPERIAL GERMAN CONSULATE,
CHICAGO, June 28, 1899.

In regard to your letter of the 11th of this year, I write to state that the Cosmopolitan Post-graduate College is permitted by law to give the degree of doctor (D. D. S.) after passing examinations. The course lasts eleven to thirteen weeks and is not arranged in classes. The directors of the college, Dr. Weil and others, have a good reputation as far as I know.

If the degree given in this college has the same value as those given in other colleges I am not prepared to say. I have neither means nor opportunities to investigate the many institutions which exist in this country and which are not under our control.

Concerning the value of American doctor diplomas in Germany, you can best be informed in Berlin.

The Imperial Consul,
(Signed) F. A. LETTENBAM.

From the *Basel Vorwärts* of March 12, 1901.

"The doctor factory in Philadelphia which, as is well known, on the payment of several hundred dollars, helps every one to a doctor title, is now so crowded with work, that, to furnish the paper for doctor diplomas, eight large paper factories are working day and night uninterruptedly. And even then thousands of aspirants for the doctor title must be turned away daily or put off to future years. Among the applicants for the coveted title are numerous ladies; the modern American lady knows no higher ambition (or has no higher pride) than to place Dr. before her name."

DRESDEN, Jan. 30, 1901.

PROF. DR. BARRETT, HONORED PROFESSOR:

The Society of Graduate Dentists in Dresden sends you a copy of one of the Cosmopolitan Post-graduate College diplomas. With this diploma they receive the title of doctor (D. D. S.). The Society of Post-graduate Dentists in Dresden consider this title worthless. We beg, dear Doctor, that you explain to the German Consulate at Chicago the value of this college, that they may send us an official statement of its worthlessness, as speedily as possible, and that we may deal justly with the consulate. The Foreign Relations Committee has already been notified.

In one of your letters to Dr. Miller of Berlin, were some very interesting facts about the Cosmopolitan College. We hope it is possible for you to obtain the official statement for us, and that the college, which we have no doubt has been closed by the law, and the directors of the college shall meet their reward.

It will then be an easy matter to persuade the Ministerium in Saxony of the worthlessness of the college and to obtain the punishment of these gentlemen.

Believe me with very great respect, and the compliments of the Society Graduate Dentists of Dresden.

(Signed) BOENHERR.

TRANSLATION.

DRESDEN, Jan. 14, 1901.

DR. W. C. BARRETT:

Dear Professor: Your kind letter and report of the Foreign Relations Committee were received a short time ago. Allow me to thank you most sincerely for having sent the explicit account to our college, Dr. Boenherr. Our association has carefully weighed and considered the letter and is confident we are now able to take a further step in doing away with the diploma swindles in Germany. as well as to unmask the bearers of the false title of "Cosmopolitan Post-graduate College of Chicago."

It is difficult to understand how it was possible that the "Ministerium" should acknowledge the title after the very superficial examination, and moreover how it could be permitted that the bearer of this diploma could make use of the same. Thanks for the excellent proof that we now have, owing to our colleagues. We sincerely hope that we shall be able to convince the officials of the falseness of the title and thereby do away with this swindle, especially since it is of vital interest to the whole dental world.

As soon as this matter is settled we shall not fail to send you and all our colleagues in America an accurate report. So far we have not yet secured the official certificate of the German Imperial Consulate of Chicago by aid of which we can readily overcome all difficulties. Although we made known to the consulate of Chicago about nine months ago the facts concerning the existing condition of the "Cosmopolitan College" we received an evasive rather than an explanatory answer. This made us consider the matter seriously, if not suspiciously, in fact, to such an extent that we may report the deficiency to the "Chancellor's" office in Berlin.

It seems impossible that the consulate should be ignorant of the worthlessness of the said college, when you as well as Dr. Brophy, Dr. Kirk and Profs. Miller and Hesse of Germany have given us such definite information. We have also reports from the following sources : The *Dental Cosmos,* March, '99, page 287; *Items of Interest*, No. 7, July, 1899. Can you in any way explain why the German Consulate of Chicago gave us such unsatisfactory answers?

You would confer a great favor on us by giving us an official document about the "School of the Cosmopolitan Post-graduate College." Of course we shall pay all expenses in connection with this.

Sincerely yours,
(Signed) C. BLOCHMAN.
Society of Graduate Dentists of Dresden.

TO W. C. BARRETT, BUFFALO.

Dear Professor: Your kindness requires especial thanks. I hope that your explicit document will make an impression upon the ministerial offices.

It may be of interest to you to know that the Saxon Minister received a favorable report from the German Consul regarding the questionable college and said Consul at Chicago is therefore not free from complicity. We must, therefore, be under great obligations if you could obtain a proper document from the general counsel in Chicago, telling us of the quality of said college.

Yours,
(Signed) YOENKEN, D. D. S.

Exhibit I.

MUNICH, JAN. 5, 1901.

DR. J. G. REID, CHICAGO, ILL.

Esteemed Sir: I am informed that you are President of the Illinois State Board of Dental Examiners.

Will you as such kindly inform me whether candidates for the practice of dentistry in your State are not obliged to have pursued a course of study, for at least a short period in some school of dentistry, before being admitted to examination before your board.

(2) Kindly reply how it comes that certificates are issuing with Dr. Smyser as Secretary and Dr. Jocelyn as President of your Board of Examiners.

(3) Are certificates complete and legal if issued without the signature of yourself or of Dr. Pitner, if issued September, 1900?

An early reply is most respectfully requested,

Very truly yours,
JAMES H. WORMAN,
U. S. Consul.

Exhibit J.

STATE BOARD OF DENTAL EXAMINERS,
CHICAGO, JAN. 22, 1901.

JAMES H. WORMAN, U. S. CONSUL, MUNICH, GERMANY.

Honored Sir: Your letter of Jan. 5 addressed to me as President of Illinois State Board of Dental Examiners was duly received. While I am not the president of the Board, I am its secretary and such correspondence is usually delegated to such officer to answer.

Candidates for examination do not have to present credentials of any kind to be admitted before the Board. Any one who may desire can come before the Board, irrespective of how much or how little knowledge he may possess on dental subjects. The Board determines his qualifications after the examination.

2. Licenses bearing the signatures of only three members of the Board can only be explained on the ground that the former secretary did not send the license to Dr. Pitner or myself for signing, and the majority of licenses abroad would not have been signed by us any way, especially those issued during the past two years.

3. To my knowledge the courts of this State have never passed upon the question of the requisite number of names that shall appear on the document to make it legal. From what we see, one is led to suppose that three names are sufficient to make it legal. The law says in plain that the license shall be signed by the members thereof. So long as I remain secretary of the Board no license will appear in your country without the required number of names.

There are times when the Board might be vacant for some time. There are times when a member of the Board could not be reached, hence his signature could not be obtained, but these are only exceptional cases, and not general.

I enclose you with this letter a copy of the law that you may familiarize yourself.

Any further information you may desire I will gladly furnish if within my power.

Very respectfully yours,

J. G. REID, D. D. S., Secretary.

UNITED STATES CONSULATE,

MUNICH, GERMANY, Feb. 7, 1901.

DR. J. G. REID,
Sec'y Ill. State Bd. of Dental Ex.,
1006 Champlain Building,
Chicago, Ill., U. S.

Dear Sir: Please accept my thanks for your prompt answer, and your kind explanations as well as for the enclosure with your favor of 22d January. Kindly favor me with two new copies of same. May I now hope to have your answer to the following queries:

1. Why was one Emil Gumpoldt granted a license to practice dentistry in Illinois under date of May 5, 1900?

2. Why was the paper signed by only three members, and why was a new issue of this certificate made in September?

3. What evidence of fitness did he furnish for such licensing and why do the two certificates differ in contents?

4. Have these certificates any value so long as they were not filed in the County Clerk's office within six months?

5. How came it that Dr. Weil, himself interested in "graduating" students in dentistry and the head of a suspected institution and excluded from the list of reputable colleges, was permitted to conduct the examination of said Gumpoldt, or at least to assist as an interpreter?

6. Are the examination papers of this candidate on file at your office; also his diploma?

Kindly give me answer by return post and oblige,

Yours truly,
(Signed) J. H. Worman.

FOREIGN CORRESPONDENCE.

Letter From Great Britain. Foreign Relations.

The remarks I have had occasion to make about the International Dental Congress, to which exception has been taken by the editor, are all perfectly true. If the editor did not observe them it was because he was largely conspicuous by his absence at the meetings of the congress. I have attended several large meetings of the profession in my life, but for disorder and confusion the Paris meeting bears the palm.

The matter of "foreign relations" has been exercising the American dentists a good deal, and I would wish to point out a defect which will have to be remedied before any serious advance can be made in this direction. In the first place it is hardly likely that foreign countries will yield to the importunity of resident American dentists in this matter so long as there is no standard of dental education in America. In the second place the States themselves are not agreed on an educational standard. However desirable this international reciprocity may be it is at present impossible to be carried out, because without any defined standard in America, other countries will not yield the educational standards that have possibly been considered an advance of the standards in America. My remarks do not apply to technical or professional education, but to the standard of general education. One serious defect has already shown itself in the action of the "Committee of Foreign relations of Great Britain and Ireland" in that they have placed upon that body a dentist, who does not practice in harmony with the laws of the country he lives in, not being a *registered* practitioner. This gentleman has lived some twelve or fourteen years in England, which should have afforded him ample opportunity in time, to qualify for an English diploma and legal registration if he had taken the trouble. I can hardly believe that Americans will support the claims of a dentist to sit upon this advisory committee who is not in harmonious relations with the laws of the country in which he practices and lives. This gentleman's case was brought before the General Medical Council of Great Britain and Ireland with the result that the preposterous claims put forward on his behalf had to be abandoned. Had these claims unfortunately escaped the vigilant attention they received, all the labor, anxiety and trouble of the Dentists' Act of 1878 would be of no effect and the laws broken.

Shall I hope that Americans interested in the "foreign relations" will take sedulous care that dentists not practicing in harmony with the laws of the country in which they live and earn their bread shall be excluded from all such representative positions.

It would be very desirable no doubt that highly educated dentists of any country should be able to practice their profession anywhere in the world, so long as they were honorable and skillful practitioners and on giving proper assurances of their status in their own country, and the education they have received. The difficulties of carrying this out all over the world are very great, although we see nations drawing together in friendly communication and good will that seemed impossible even ten years ago.

May I ask, Mr. Editor, that you will give your powerful help to secure that only representative men who *are* practicing in harmony with the laws of the country in which they live shall sit on the foreign relations committee in Europe. You will remember no doubt the comment you made upon the instructions said to have been issued at Washington to Mr. Choate, the American Ambassador to Great Britain and Ireland at the Court of St. James. Without some understanding and examination of the matter from another point of view nothing but confusion, misunderstanding and ill will must result. Geárchóta Bháu.

COLLEGE COMMENCEMENTS.

CHICAGO COLLEGE OF DENTAL SURGERY (DENTAL DEPARTMENT OF LAKE FOREST UNIVERSITY). THE NINETEENTH ANNUAL COMMENCEMENT, CENTRAL MUSIC HALL, TUESDAY, APRIL 30, 1901.

GRADUATING CLASS OF 1901.—Gustave Adolph Anderson, Thomas Albert Alexander, James Walton Ames, Dane Randall Allen, Albert Edward Aunger, William Henry App, Lester Franklin Bryant, Claude Bertram Brownell, Wilbur Parsons Buck, Asa David Clifford Barnes, George Arthur Brown, Samuel Hamilton Behringer, Orville Sylvester Burnett, Edmund Cecil Borley, Chadz Berthold Bell, Irving Wilson Bean, Charles William Benson, George Rowland Bardwell, Cecil Vincent Connole, Andrew Culhane, Leonard Wright Cleveland, Ross Elbert Chandler, Frank Edward Collins, Fred Claire Clow, Orville Chauncey Clemens, John Franklin Curran, Jacob Burton Carey, Charles Roland Cretors, Thomas Henry Deacon, Israel Drozdowitz, Cyprien Buisson Dezell, Charles Arthur Easterly, Henry Brown Ebner, Thad Luther Farnsworth, William Harry Ferguson, Theodore Fred Fox, Frank Emmerson Follett, Samuel Wilbur Fahrney, Frank Fernando Fish, Carl Fossum, Delne Muller Field, Charles Celdon Finch, George Albert Gehbe, Willard Graybeal, Joe Herbert Gleason, Charles Lewis George, Thorvald Levin Gerner, Andrew Curtis Griffith, Karl Herbert George, John Frank Gabriel, Leonard D. Grant, Horace Elias Griffin, Hurbert H. Geiger, Morley Samuel Gallagher, James Albert Garland, Rowland J. Hollenbeck, William Noel Hixon, Andrew Thomas Hummel, William Bixby Harris, Timothy Aloyisus Hardgrove, Fred Watson Heatlie, Hezekiah Hayes, William Hausmann, Jr., John Carl Huecker, Benj. Naylor Hughes, Tobias Henry B. Hocking, Philip Heyward Hart, Roderick Houston, Henry Helot, Stanley Heymar, Robert Holt, William Warren Hussey, David Timothy Jones, John Arthur James, Louis Edward Jordan, Martin Luther Johnson, Arne Krog Jansen, Corliss Howard Jones, Sydney Joseph Knowles, Otto John Kolar, Leander King, Walter Smith Kyes, George Peter Kalk, J. Ambrose Kelley, Garrett Powell Kenney, Edward Dixon Kenward, Warren Leroy King, John Albert Loomans, John Peter Lederic, Levi Greene Lemley, Carl Alfred Lovgren, John Harold Lee, Frank Stafford Locke, John Robert Leib, Robert Hanson Libby, Wendell Morse Lemon, Everett Elmer Lane, Harvey Clinton McMullen, William Randolph McLean, John Tait Murray McCallum, John Robert McCoy, Rea Proctor McGee, Thomas George McGrory, Edwin Lange McKee, Harry Storrs Miles, Niels Matzen, Frederick Felix Molt, Daniel Raymond Murray, James Jay Mount, Albert Warren Marshall, Edwin Alfred Mead, Donald Marion, John Thomas Miller, John Clark Young Moore, David George Mahood, Arnold Denbrow Alfred Mason, Daniel Edward Maloney, Stephen Henry Matter, William Clyde Marks, Samuel Cloud Noble, Paul Sheriff Orth, William Oliver Ogle, James Edgar Paul, Charles Elwood M. Parker, Louis C. Proctor, Percy Thomas Perry, Samuel S. Patterson, Ira D. Phipps, Rudolph August Pellage, George Harold Pace, Alexander Pope, Luther Hansford Phipps, William Satterlee Potter, Jr., Samuel Arthur Pangburn, George Abraham Russell, Oliver Thomas Robinson, John Mathis Risley, Clarence Lacell Rork, Bert Samuel Russell, Alex. Adams

Richardson, Jr., Richard William Reinhart, Matthew Joseph Reidy, Sheldon Robert Ross, Tennyson Joseph Ricard, Charles Amasa Rhoads, Harold Roy Read, Hagbart J. Rice, William Kean Ramsey, William Beckwith Reeve, D. D. S., George John Rehm, Henry Acton Roan, Frank Robert Swan, Herman Frederick Schleiffarth, John Joseph Sullivan, James Rex Sholl, Allan Ezra Shaver, Oscar Henry Sorsen, Louis Schultz, Ervin Earl Smith, Max Coulter Shuler, John Adolph Schleuter, Jr., Arthur Flagg Switzer, Guy De Vere Schaffner, John Joseph Schultz, Claude Adams Sherman, Kazuo Sato, Victor Robert Schiller, Charles Shepherd Tuller, Walter Emery Tennant, John Harris Taylor, William Hamilton Tweedle, Garnet Morley Trewin, Gordon Tucker, Albert Tucker, Allen LeGrand Vaughn, William Asa Winters, Adrian Lafayette Wallick, Johnson Conrad Winters, Winfield Walter Walker, Maurice Vincent Wolfe, Charles Fremont Watt, Elmer Henry Weber, Clinton Cassius Webb, Floyd G. Wolcott, Randall Smallwood Williams, Harry Walcott Walker, Charles Eben Warner, Leslie B. Young.

NORTHWESTERN UNIVERSITY DENTAL SCHOOL, STUDEBAKER HALL, THURSDAY AFTERNOON, MAY 2, 1901, CHICAGO.

GRADUATING CLASS.—Charles Ackerman, Robert Alfred Adkins, John Rankin Akers, Morley Walton Anderson, Peter Appel, James Graham Atterberry, John Franklin Austin, John Baptiste Baasen, Guy B. Baird, Arthur Baldwin, James Otho Baldwin, Robert Oscar Beadles, Frank Chester Beebe, Louis John Behm, Joseph Lambert Benson, James Ambrose Bevan, John Alfred Bishopp, William Frederick Blair, Otto Ferdinand Bohman, David Harley Bowen, Duane Franklin Bradshaw, Harry Martin Brock, Ferdinand V. Garretson Brown, Percy Alexander Burhans, Charles Hickey Burkhart, Josephine Butler, Rolla Walter Butturff, Clyde Cadwell, Samuel Lester Carr, Wesley Harrison Chapman, Thomas Clark, John William Clevenger, Algernon Bruce Coffin, Peter B. Cogley, Thomas Coleman, George Merrill Collins, Winifred Conley, Enos Eli Copple, George Burris Corbitt, George Joseph Couvrette, Frank Lawrence Cummins, Thomas Hogan Daly, Robert Kepler Davis, Ernest Walter Day, Frank Deitch, Edward Arthur Demling, Katharyne Alice Doherty, Michael Albert Donahue, Newton Wesley Emery, William Claude Ercanbrack, George Edwin Erret, Dow Marcus Fagg, William Henry Falloon, Arthur Clayton Fawcett, George Kime Fleming, William Joseph Frank, Thomas J. Fritz, Alvin Robert Gansel, Frank Miles Garrett, Orlando Charles Gilbert, John Michael Gilmore, Alfred Wilson Glass, Charles Fredrick Gottfried, William Wallace Gray, R. Allen Griffith, Albert Fredrick Hacker, Harry Cook Hadfield, Ca Theodore Hansen, Arthur John Hawkes, David Judson Heisey, Buell Henline, Herbert Eugene Hickman, Frank Benjamin Hines, James Jacob Hoffer, Olive Camille Hopwood, John Walter Horne, Louis Grant Hotch, Aleck Densmore Howat, David John Hughes, Elmore Thellus Hull, Ora Dell Ireland, Hayes Michael Isenberg, Oro Johnson Jarrett, James Jensen, James Philip Johnson, Carl Lewis Jones, William Henry Jordan, Anton Raymond Kempter, Arthur Inglesby Kennedy, James Maddigan Kennedy, William Jasen King, Archibald Morgan Kingsbury, George Guy Knapp, George Robert Ferdinand Koch, Charles Simon Kramer, Walter Gerhard Kremers, Abraham Samuel Kruchevsky, George Eugene Krueger, Charles Benjamin Lacy, John

S. Laidlaw, Vernon Orlando Landon, Harry Earl Latcham, Franc D. Light, Nils Herman Linderoth, Charles Oscar Lovitt, Joseph Francis Lunak, William H. McCarty, Arthur J. McCormack, Thomas Roger McCoy, Thomas Benton McCrum, John Stewart McGowan, William David McMaster, Francis Earle McMennamy, Kenneth McQuarrie, John Rae Macdonald, George Mack, Arthur Augustus Mahle, Lynn Duaine Mathews, Wesley John Mathieu, Philip Leopold Mathisen, Daniel Homer Meeks, Otto Charles Meves, Walter Fred Meyer, Charles S. Miller, Frederick Miller, Gustave Edward Miller, Edward Luke Milligan, Arthur Timothy Moore, Edward Clements Moore, Louis J. Nelson, Melvin Ray Nelson, Herman Christian Newton, John Peter Nielsen, Marshall D. Nisbet, Reginald Charles Northwood, Webster Hamblin Nunn, Clark Orr, Harry William Oyster, Myrtle Jane Page, Fredrick Nelson Pellett, Royal Strong Pershing, John Petry, Herbert Phillips, Curtis Brackett Pottle, Harry Clayton Puckett, William Michael Purcell, Ervin Clifton Read, John S. Reece, William Hutchinson Reid, Alonzo Clarence Render, George Theobald Richards, Herman Henry Rohwedder, Charles Ferdinand Rossteuscher, Robert Jasper Ruckman, Adolph Emil Schneider, Leonard Julius Schneider, A. Clarence Schoch, Herman Julius Schulze, Harry Elmer Sears, Lyman Sexmith, Robert Edward Shanks, William Shay, William David Siebecker, Omer Francis Sinks, Gunnar Herman Skogsborg, Charles William Smith, Ernest Ray Smith, Grant Hibbard Smock, John Grant Spalding, Robert Alexander Stevenson, Earl Noble Stoffel, Hiram Chandler Stokes, Milton William Strauss, George William Stroeter, James Thomas Sweeney, Lemuel Emerson Taylor, William Albert Thomas, Joseph Ferdinand Thompson, Joseph Tichy, Paul Ives Todd, Thomas Ottaway Treen, George Thomas Tristram, John Wilbur Vogan, Mark LeRoy Wait, Benjamin Waldberg, William Henry Walsh, Frederic Horace Waters, George Wilton Wentworth, Edward A. Werner, Oscar LeRoy Whitson, John Elwood Wickham, Earl Emmons Wilson, Oscar James Wisman, Morris Russell Wolfe, Eugene Ripley Wyatt, Merle Dembster Young.

DENTAL DEPARTMENT UNIVERSITY OF OMAHA, WEDNESDAY EVENING, MAY 1, 1901, AT THE ILER GRAND, OMAHA.

GRADUATING CLASS.—Eugene L. Bellamy, Arapahoe, Neb.; Frank W. Call, Fontanelle, Iowa; William W. Driver, Shenandoah, Iowa; George R. Gard, Ord, Neb.; Louis A. Kenner, North Manchester, Ind.; Josephine G. King, Rapid City, South Dak.; Theodore Kroeger, Hooper, Neb.; John Meradith, York, Neb.; Clide C. Metzler, Holden, Mo.; Guy T. Morgan, Preston, Minn.; Norman H. Morrison, Red Cloud, Neb.; William H. Patterson, B. B. E., Wilton Junction, Iowa; Waldo E. Propst, Geneva, Neb.; Frank B. Schultz, Heim, Neb.; Leslie G. Van Slyke, Geneva, Neb.; Elmer E. Wilson, St. Edwards, Neb.

ILLINOIS SCHOOL OF DENTISTRY, STEINWAY HALL, CHICAGO, MAY 4, 1901.

GRADUATING CLASS OF 1901.—Perry A. Armstrong, Carver M. Brown, Albert B. Clark, Melvin B. Corthell, Roy S. Donaldson, F. S. Elliott, M. E. Fales, H. A. Frankel, G. B. Hamlin, Martha P. F. Hauff, Olin C. Hassler, C.

S. Hines, I. Helen Imbritt, Clayton M. McCauley, Albert J. McDowell, W. Wunderlich Misher, C. M. Paden, Hal. H. Ramsey, Charles J. Reardon, Adolph Rodosy, Edw. H. Rudd, Ernest O. Smedberg, Stanley T. Springer, Karl Stecher, Geo. J. Strauss, S. S. Swihart, Geo. W. Taylor, Harrie W. Watkins, Sigmund Wollenberger.

REVIEWS AND ABSTRACTS.

THE EVOLUTION OF DENTAL ART. THE DENTAL SCHOOL, ITS HISTORY, ITS ACTION, ITS FUTURE. BY DR. CH. GODON, director of the Dental School of Paris, 1901. 1 vol., large octavo, 366 pages and plates. 10 fr. (J. B. Baillière and Son, Booksellers, 19 rue Hantefeuille, Paris.)

The author first reviews the evolution of dental art through the ages. He shows us that in all epochs, in the civilizations of the Egyptians, the Greeks, the Romans, the Arabs, the art of dentistry was practiced by specialists as it is in our times. He divides this historical part into a practical period and a scientific period. The first goes back to the remotest antiquity to end at the close of the seventeenth century; the second begins in 1727 by the publication in France of the first work on dental art, the Surgeon-Dentist, of Pierre Fauchard; it proceeds to the foundation of the first odontological society and principally of the first dental school, in 1839, in the United States.

Odontology, a new science, has accomplished rapid and important progress in the last sixty years, thanks to the multiplicity of dental schools founded in all countries (they actually number more than 150). The summary report that he gives of the important International Dental Congress, held at Paris in the month of August, 1900, and which ended in the establishment of a Universal Dental Federation, serves to verify these interesting results.

In this second part of his study, the author has specially singled out as a type of the scientific evolution of odontology the Dental School of Paris, whose history he relates. He makes us appreciate the influence it has exercised on the revival of odontological studies in France by the works whose creation and development it has incited, and to whose agency is due the social position of the new surgeon-dentist created by the law on medicine of 30th November, 1892.

Two synoptical tables of the program of instruction, the one of the year 1880, the other of the year 1900, affixed to the end of the work, sum up the progress realized during the last twenty years.

A final part is devoted to instruction and dental schools.

The work closes with deductions that show the principal desiderata of the surgeon-dentists of all countries.

STATE OF NEW JERSEY.

An Act to amend an act entitled "An act to regulate the practice of dentistry in the state of New Jersey, and to repeal certain acts now relating to the same," approved March seventeenth, eighteen hundred and ninety-eight.

Be it enacted by the Senate and General Assembly of the State of New Jersey:

1. Section two of the act referred to in the title of this act be and the same is hereby amended so as to read as follows:

2. The members and officers of the State Board of Registration and Examination in Dentistry, as now constituted pursuant to chapter one hundred and forty-three of the laws of eighteen hundred and ninety, may continue to hold office until the expiration of their terms, unless previously removed; the New Jersey State Dental Society shall, at each of its annual meetings, recommend to the Governor for appointment as a member of said board a dentist of good repute, residing and practicing in this State, whom the Governor shall appoint; the member so appointed shall hold office for five years, or until his successor is appointed; the Governor shall also fill, for the unexpired term only, vacancies occurring in the board by reason of death, resignation or otherwise; cause being shown before him, he may remove a member from office upon proven charges of inefficiency, incompetency, immorality or professional misconduct; the board shall, at its annual meeting, elect from its members a President and Secretary; it shall hold at least two meetings annually for examining and licensing persons to practice dentistry in this State, at which meetings three members shall constitute a quorum; said board shall have the power to determine the good standing and repute of any dental school, college or department of a university, and may from time to time designate

in some public manner schools, colleges or departments of universities whose diplomas will be received by it; it shall annually make a report of its proceedings to the Governor and to the New Jersey State Dental Society; the seal heretofore adopted by it shall continue to be the common seal of the board; it may sue or be sued, and in all actions brought by or against it the board shall be designated as "The State Board of Registration and Examination in Dentistry."

2. Section six of said act is hereby amended to read as follows:

6. Said board shall register as licensed dentists, and under its seal and the hand of its President and Secretary, issue to all persons who shall successfully pass said examination, its license to practice dentistry in this State; the board may also, without the examination hereinabove provided for, issue its license to any applicant therefor who shall furnish proof satisfactory to it that he has been duly licensed after examination to practice dentistry in any State after full compliance with the requirement of its dental laws; *provided, however,* that his professional education shall not be less than that required in this State; every license so given shall state upon its face the grounds upon which it is granted, and the applicant may be required to furnish his proof upon affidavit; the fee for such license shall be twenty-five dollars.

3. Section eight of said act is hereby amended to read as follows:

8. This act shall not be construed to prohibit an unlicensed person from performing mechanical work upon inert matter in a dental office or laboratory; or to prohibit the registered student of a licensed dentist from assisting his preceptor in dental operations while in his presence and under his direct and immediate personal supervision; or to prohibit a duly licensed physician from treating the diseases of the mouth or performing operations in oral surgery; nothing in the provisions of this act shall be construed to permit the performance of dental operations by any unlicensed person under cover of the name of a registered practitioner; any person now registered as a student may present himself for examination to the board upon complying with the provisions of this act relative to examination, and presenting to the board a certificate, under oath from the dentist or dentists with whom he has studied, that such applicant has studied as a student with the den-

tist or dentists so certifying for not less than five years continuously; *provided, however,* such applicant shall have filed, on or before the first day of June, eighteen hundred and ninety-eight, a notice with the board that it is his purpose to avail himself of the exemption hereby made; the board may, however, at any time, upon proof of the violation of any of the provisions of this act by such student, revoke his right to present himself for and pass such examination; any person shall be regarded as practicing dentistry within the meaning of this act who shall use the words "doctor of dental surgery," "doctor of dental medicine," or the letters "D. D. S." or "D. M. D." in connection with his or her name, or any other title intended to imply or designate him or her as a practitioner in dentistry in all of its branches, and who, in connection with such title or titles, or without the used of such titles, shall practice dentistry in any of its branches; *and it is further provided,* that the use of any one of the aforementioned titles or the exposition of a sign, circular, advertisement or any other device or information indicating thereby the occupation of the person or persons, shall be taken and considered in the trial of any indictment which may be found for the violation of any of the provisions of this act, or in the trial of any civil action for penalties under the provisions of this act, as prima facie evidence.

4. This act shall take effect immediately.

Approved March 22, 1901.

BOOK REVIEWS.

POEMS OF THE FARM AND OTHER POEMS. By CHARLES NELSON JOHNSON. Chicago: Daniels Company Press. 1901. Cloth, white and gold, $1; paper, 50 cents. Pages, 75.

This dainty little volume comes from the pen of Dr. C. N. Johnson, the author of the "Hermit of the Nonquon" and other well-known volumes. Dr. Johnson has a delicate fancy, and these are among many of the choice verses that he has contributed to various professional and lay periodicals during the past few years. No one who is acquainted with his style will fail to appreciate the pathos and delicate sensibility of these tender verselets. They appeal at once to some responsive chord, ready to be touched by their unfolding from the first line to the last. "The Sand Man," and the "Kiss the Spot to Make It Well," and "My Daughter's Birthday," as well as others, bear the evidence of the author's own feeling so well spread before you that you are at once deeply in love with the spirit of his poems.

Books Received.

Report of the Commissioner of Education, 1898–99. Vol. I.

Pamphlets Received.

Self-Examination for Medical Students. P. Blakiston's Son & Co., Philadelphia, Pa., 1901. Third edition. Pages, 225. Price, 10 cents; paper.

MEMORANDA.

Dr. Frank N. Brown will locate at Abilene, Texas.

Iowa State Dental Society will meet at Clear Lake, May 21, 22, 23 and 24.

The Nebraska State Dental Society will meet at Omaha, May 21, 22 and 23.

Dr. M. H. Aspinwall has gone to London, England, to manage the Keely cure.

The Palisade Company are compiling a book to be called "Facts and Figures, Medical and Otherwise, from the Census of 1900 and Other Reliable Sources." If you wish a copy send to the company at Yonkers, N. Y.

MINNESOTA STATE DENTAL ASSOCIATION.

The eighteenth annual meeting of the Minnesota State Dental Association will be held at Duluth, Minn., on Thursday, Friday and Saturday, August 1, 2 and 3, 1901.

Geo. S. Todd, *Secretary*.

AMERICAN MEDICAL ASSOCIATION. SECTION ON STOMATOLOGY.

The next meeting of the American Medical Association will be held at St. Paul, Minn., June 4, 5, 6 and 7, 1901. A very interesting program has been prepared. Members and all who are eligible are invited to attend.

The fifth union meeting of the Maryland State Dental Association and the District of Columbia Dental Society May 16, 17 and 18 at the Baltimore Medical College (Dental Department). An attractive program has been issued and many new clinics are to be given. If you can go you are sure to have a good time.

AMERICAN DENTAL SOCIETY OF EUROPE.

Officers for 1901-2: Dr. W. E. Royce, Tunbridge Wells, President; Dr. F. Foerster, Berlin, Vice President; Dr. Wm. A. Spring, Dresden, Hon. Treasurer; Dr. L. J. Mitchell, London, Hon. Secretary. Next meeting will be held in Stockholm, in August, 1902.

WASHINGTON STATE DENTAL SOCIETY.

The 14th annual meeting of the Washington State Dental Society will be held in Seattle, Wash., May 27, 28, 29.

Dr. G. V. Black, of Chicago, will give demonstrations and clinics. A good program has been prepared.

E. J. Fisher,
Secretary.

NOTICE OF CONSOLIDATION.

The dental schools of Colorado, formerly known as the "Denver School of Dentistry, Dental Department of the University of Denver," and the "Colorado College of Dental Surgery, Corporation," have combined, forming a union school, which will conduct the dental department of the University of Denver hereafter under the name of the "Colorado College of Dental Surgery."

A. L. Whitney, D. D. S., *Secretary.*
Denver, Colo.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The nineteeth annual session of the National Association of Dental Examiners will be held at the Plankinton Hotel, Milwaukee, Wis., Friday, August 2, commencing at 10 A. M., and continuing Saturday and Monday. Arrangements are under way for those residing in the Middle and Eastern States for a reduced fare by the Lehigh Valley Railroad from New York and Philadelphia. Full particulars in the June dental journals.

Charles A. Meeker, D. D. S.,
Secretary.

COLORADO STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners for the State of Colorado will meet in Denver, June 3, 1901, at 10 A. M., to examine applicants for license.

In addition to the usual written and oral examination, candidates must supply their own patients, and come prepared with all necessary instruments, rubber dam and gold, to perform practical operations under the supervision of the board, which will pass on suitable selections of cavities.

H. F. Hoffman, *Secretary.*
No. 611 California Bldg., Denver, Colo.

ODONTOLOGICAL SOCIETY OF NEW SOUTH WALES.

At the second annual meeting of the Odontological Society of New South Wales, Mr. P. R. Pedley presiding, the annual report, which was adopted unanimously, showed satisfactory progress.

The election of officers for 1901 resulted as follows: President, Dr. A. Burne; Vice President, Mr. Edward Reading; Hon. Treasurer, Mr. E. K. Satchell; Hon. Secretary, Mr. Donald Smith; Council, Dr. W. S. Hinder, Mr. P. R. Pedley, Dr. E. R. Magnus, Dr. F. D. Magnus, Mr. P. B. Reading, Mr. T. Soderberg, Mr. E. Pinhey.

PATENTS OF INTEREST TO DENTISTS RECENTLY GRANTED.

669,744. Veterinary dental float, Robert W. Ellis, New York, N. Y.
669,665. Mold for artificial teeth, Bernard Rubinson, Philadelphia, Pa.
669,963. Artificial tooth, Wm. K. Slater, Knoxville, Tenn.
670,604. Dental plate, Arnold Biber, Pforzheim, Germany.
670,773. Dental chair, Enoch M. Fredericks, Chicago, Ill.
670,481. Brush and dentifrice bracket, Charles A. Kirkwood, Chicago, Ill.
34,288. Design, head rest, Charles P. Davidson, assignor to A. C. McDowell, A. M. McCarty and A. Hoeffer, Canton, Ohio.
671,299. Head rest for dental chairs, Gideon Sibley, Philadelphia, Pa.
671,300. Head rest, Gideon Sibley, Philadelphia, Pa.

Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, solicitor of patents, Fendall Building, Washington, D. C.

NEW JERSEY STATE DENTAL SOCIETY.

The thirty-first annual session of the New Jersey, State Dental Society will be held in the Auditorium, Asbury Park, N. J., commencing Wednesday 10 A. M., July 17, and continuing in session Thursday and Friday. The "Columbia" adjoining will be the headquarters with the rates of $2.50 and $3 per day.

To the busy practitioner who desires to witness the latest and best efforts in clinical dentistry—"come." Fifty clinics.

The best and newest efforts in the science of dentistry—come and hear five papers read. For a veritable museum of the latest in electrical appliances, mechanical tools, the chairs, instruments and accessories of the modern dental office, come and see us and mark the days off now. The time will not be wasted, you will see the contents of not only one dental depot but of all the country. The best efforts of the inventions pertaining to our profession up to date. The city dentist as well as the one from the cross-roads can all see and learn something.

CHARLES. A. MEEKER, D. D. S.,
Secretary.

TRI-STATE DENTAL MEETING.

This will be the largest meeting of the summer and one of the best. All roads run to Indianapolis and every dentist in the United States, who is conducting his practice in a legitimate manner, is urged to come and break bread with us. We do not care whether you are a member of a State association or not, "if you do unto others as you would they should do unto you."

The third triennial meeting under the auspices of the State Associations of Ohio, Michigan and Indiana, will occur June 4, 5, 6, 1901, at Indianapolis, Indiana. The German House, Corner of Michigan and New Jersey streets, has been secured for the meeting and exhibits. The Central Passenger Association has granted a round trip rate of a fare and a third, on the certificate plan. Any inquiries addressed to 131 E. Ohio St., Indianapolis, will be cheerfully answered. The program to date includes:

1. Paper. "Critical Periods in the History of the Human Teeth." Charles N. Johnson, L. D. S., D. D. S., Chicago, Ill. Discussion to be opened by H. A. Smith, Cincinnati, Ohio, and H. B. Tileston, Louisville, Ky.

2. Paper. "Porcelain As An Art in Crown Work." Frederick J. Capon, M. D. S., D. D. S., Toronto, Canada. Discussion to be opened by John E. Nyman, Chicago, and Hart J. Goslee, Chicago.

3. Paper. "Diseases of the Gums and Sockets of the Alveoli." C. M. Wright, M. D., D. D. S., Cincinnati, Ohio. Discussion to be opened by...... .... and Junius E. Cravens, Indianapolis.

4. Paper. "Dental Neurasthenia." W. H. Whitslar, M. D., D. D. S., Cleveland, Ohio. Discussion to be opened by Robert I. Blakeman, Indianapolis, and ....

5. Paper. "Some Considerations in Modern Bridge Work." J. L. Young, D. D. S., Detroit, Mich. Discussion to be opened by .... and W. Wallace Mungen, Ft. Wayne, Ind.

6. Paper. "A Study of Tooth Bleaching." Nelville S. Hoff, M. D., D. D. S., Ann Arbor, Mich. Discussion to be opened by J. S. Cassidy, Covington, Ky. J. P. Buckley, Chicago, Ill.

7. Paper. "Continued Anesthesia with Nitrous Oxide Under Definite Pressure." William A. Heckard, D. D. S., Indianapolis Ind. Discussion opened by O. N. Heise, Cincinnati, Ohio, and others.

8. Paper. "The Human Face and Articulate Speech Divine." George E. Johnson, D. D. S., Ft. Wayne, Ind. Discussion opened by .... and Grant Molyneaux, Cincinnati, Ohio.

CLINICS AND EXHIBITS.

1. F. J. Capon, Toronto, Canada: Porcelain inlays.
2. C. E. Esterly, Lawrence, Kas: Some compressed air appliances.
3. H. P. Carlton, San Francisco, Cal.: A matrix. Knowles plugger for matrix. An oxyphosphate cement.
4. W. H. Cudworth, Milwaukee, Wis.: Porcelain inlays.
5. C. V. Vignes, New Orleans, La.: Extracting forceps with removable beaks, and new amalgam carrier.
6. C. S. Case, Chicago, Ill.: To be announced.
7. E. J. Perry, Chicago, Ill.: Prosthetic wrinkles.
8. W. E. Griswold, Denver, Colo.: System of retaining springs for saddle plates and removable bridges.
9. Hart J. Goslee, Chicago, Ill.: Porcelain crown and bridge work.
10. George B. Perry, Chicago, Ill.: Method of mounting and trueing wheels for engine and lathe.
11. J. P. Carmichael, Milwaukee, Wis.: Abutment piece in bridge work and a support in extensive gold and porcelain inlays.
12. John E. Nyman, Chicago, Ill.: Carved solid cusps for gold crowns.
13. R. B. Tuller, Chicago, Ill.: Some suggestions about the use of matrices.
14. W. E. Harper, Chicago, Ill.: Exhibit of prepared cavities with practical suggestions.
15. J. J. Wright, Milwaukee, Wis.: An appliance for keeping the field dry while setting crowns and bridges.
16. W. E. Grant, Louisville, Ky.: Some appliances used in orthodontia.
17. J. W. Clark, Louisville, Ky.: Combination filling, amalgam and gold at same sitting.

18. H. L. Ambler, Cleveland, Ohio: Filling teeth with improved tin foil.

19. C. R. Butler, Cleveland, Ohio: Adaptability of a new form of scalers.

20. W. A. Price, Cleveland, Ohio: Application of Roentgen rays in dentistry; (*a*) Results obtainable and how to interpret them—demonstrated with lantern slides; (*b*) Apparatus necessary and how to use it; demonstrated; (*c*) Practical cases.

21. L E. Custer, Dayton, Ohio: To be announced.

22. E. Ballard Lodge, Clevland, Ohio: Matrix and matrix plugger.

23. S. D. Ruggles, Portsmouth, Ohio: The removal of excess cement in setting crowns.

24. F. A. Bozer, Logansport, Ind.: Comparative anatomy exhibits.

25. F. R. McClanahan, Rushville, Ind.: Possibilities of the dental plate.

26. H. A. Moyer, Kendallville, Ind.: Richmond crown with soldered fillings.

27. E. E. Reese, Indianapolis, Ind.: Porcelain inlays.

28. Blair Blackmarr, Jackson, Mich.: To be announced.

29. W. H. Dorrance, Ann Arbor, Mich.: To be announced.

30. J. L. Young, Detroit, Mich.: Continuous gum work.

31. John L. Sweetnam, Manistee, Mich.: Something new in crown work.

32. L. F. Owen, Grand Rapids, Mich.: Gold inlays.

33. H. D. Watson, Grand Rapids, Mich.: Seamless platinum cap for porcelain work.

34. C. W. Miller, Chicago, Ill.: Contouring pliers.

35. Truman W. Brophy, Chicago, Ill.: Stereopticon exhibit in surgery of the palate.

36. George E. Hunt, Indianapolis: A scientific instrument for measuring bulk changes in plastics.

For further information address

GEO. E. HUNT, *Chairman*,
131 E. Ohio St., Indianapolis, Ind.

IN MEMORIAM.

H. J. B. McKELLOPS, D. D. S.

At a special meeting of the Society of Dental Science of St. Louis held Monday evening, April 29, 1901, the following resolutions in memory of Dr. H. J. B. McKellops were unanimously adopted:

WHEREAS, In the death of Dr. H. J. B. McKellops the dental profession has sustained a great loss which will be felt throughout the length and breadth of two continents, and

WHEREAS, The members of the profession in St. Louis and especially of this Society, who best knew the depth of his friendship and felt the inspiration of his example, will mourn his loss most deeply, therefore, be it

Resolved, That the Society of Dental Science of St. Louis hereby expresses its full appreciation of the valuable services rendered our profession by Dr. McKellops during his long and active life, and

Resolved, That in recognition of his distinguished services and the great honor in which he held his profession, a suitable biographical memorial be prepared and framed, with his photograph, and hung in the rooms of this Society, and

Resolved, That a copy of these resolutions be sent to the family and to the dental journals and spread upon the minutes of this Society.

EMMA EAMES CHASE,
HERMANN PRINZ,
B. E. LISCHER,
A. H. FULLER, } *Committee.*

Died, Dr. Henry J. B. McKellops, at his home in St. Louis, Tuesday morning, April 23, 1901, aged seventy-eight years.

Dr. McKellops was born in Saline, near Syracuse, N. Y., August 31, 1823. His father, James McKellops, died when the son was a child and his mother came to St. Louis with her son and daughter about the year 1840. Henry entered the public schools of the city, but soon after was appointed page in the Missouri legislature. With the money thus earned he attended the Missouri State University at Columbia, to which place his mother moved and remained for two years while her son applied himself to his studies. The family returned to St. Louis in the year 1844, and young McKellops took a course in bookkeeping in Jones' Mercantile College. Later he entered the city registrar's office as a clerk.

About this time he was attracted to the study of medicine and dentistry, and in 1846 entered the old St. Louis Medical College when Dr. Chas. A. Pope was dean of the institution, but through the persuasion of his brother-in-law, Dr. Silvers, who was a dentist, he was drawn to the profession and practice of dentistry. In a very short time, owing to his natural ingenuity and love of mechanical arts, he became an expert operator. He opened his first office in Capt. Elihu H. Shepard's building, on Fourth Street, opposite the Court House, and at once stepped to the front rank of his profession. With the exception of the time spent in Europe during the civil war, he continued in active practice in St. Louis during a period of over fifty-six years.

His success was marked from the outset of his dental career. In 1855, the Ohio Dental College conferred the degree of D. D. S. as a marked recognition of his ability as an operator. In 1865, he with several other prominent dentists of St. Louis, organized the Missouri State Dental Association, of which body he was the first president elected. In 1877 he was elected president of the St. Louis Dental Society, and the year following president of the American Dental Association. Six years later a similar honor was conferred on him by the Southern Dental Association, and later he was president of the Mississippi Valley Society of Dental Surgeons. During this active career he made several trips abroad, and in 1864 introduced the use of the mallet in London and Paris.

His skill as an operator was early recognized and secured him the patronage of the first families of St. Louis. His fame extended outside of the city, through the State and eventually throughout the world. He was studious in his profession, inventive in his practice, always keeping to the front in whatever step of progress was made in dental surgery. He always took a leading part in the proceedings of the dental societies and associations to which he belonged, and his standing in these organizations, both at home and abroad, is best indicated by the positions of honor he was given by choice of his associates.

Dr. McKellops also had an interesting military career. He was captain of the St. Louis Cadets in 1843 and held the same rank in the St. Louis Legion in 1845. In 1846 he commanded the Morgan Riflemen in the six months service of the Legion in the Mexican war, making the noted expedition under the command of Col. Alton R. Easton. He was a member of the famous St. Louis National Guards from its organization in the '50's and saw his first service in the riots of those days. In 1858 he marched across the State with the expedition under General D. M. Frost to put down an invasion of bushwhackers. He practiced his profession in Paris during the civil war but returned to St. Louis immediately upon the cessation of hostilities.

Dr. McKellops was married to Miss Anna Gower, of Tennessee, on the first day of April, 1849. Eight children blessed the union of whom five survive their father. They are Dr. Henry L. McKellops and Mrs. Josie Bourier, of San Francisco, Gerald G. McKellops, of Cincinnati, Linton J. and Dr. Leo Gregory McKellops, of St. Louis.

Dr. McKellops had been a great sufferer for several years, but had continued in practice until last winter, when he retired from active work. His interest in his profession he never lost, and less than a month before his death he entertained a little group of dentists visiting in the city, to honor whom was ever his greatest delight. These friends—Drs. Harlan, Hunt, Good and Hinkins, of Chicago, Dr. J. D. Patterson, of Kansas City, and Dr. Gordon White, of Nashville—found that he had failed greatly, but no one realized that the end was so near.

The news of his death, early Tuesday morning, the 23d of April, was telephoned from office to office as that of a friend dear to each dentist in the city. A special meeting of the St. Louis Dental Society was held Wednesday night and the attendance was unusually large. The first part of the evening was devoted to reminiscent and eulogistic speeches on the life and character of our departed friend. His physician and lifelong friend, Dr. E. H. Gregory, spoke first, followed by Dr. A. H. Fuller, who probably stood nearest to Dr. McKellops in our professional world, and then the other members present.

A committee was appointed, consisting of Drs. J. G. Harper, B. L. Thorpe and Edward H. Angle, to draft appropriate resolutions and prepare a sketch of the life of Dr. McKellops, to be spread upon the records of the society. Arrangements were made to attend the funeral of this most noted member of the society in a body, and the active pall-bearers—Drs. F. F. Fletcher, M. C. Marshall, B. L. Thorpe, W. M. Bartlett, De Courcey Lindsley, W. F. Lawrenz and A. H. Manhard—all members of the society, were appointed.

The funeral, which took place from the residence, was held at half past two, Thursday, April 25, and was largely attended by many men prominent in business and professional circles. There were no services at the house, but many friends came to pay this last act of respect to one who had been a great honor to his city and his profession, and who now lay at rest surrounded by many beautiful flowers. A bunch of American beauty roses, sent by the St. Louis Dental Society, almost covered the top of the casket, at the foot of which rested a wreath of laurel from his beloved daughter. Perhaps the most exquisite design of all was a great wreath of Marechal Niel roses, from the Chicago Dental Society, while on every hand were banked these beautiful tokens of loving grief from friends in many parts of the United States.

The honorary pallbearers included Drs. Geo. A. Bowman, A. H. Fuller, Edward H. Angle, John G. Harper, J. B. Newby, A. J. Prosser, M. C. McNamara and others. At half-past two the casket was borne from the house and the cortege proceeded directly to the cemetery where the local lodge of the Elks, of which Dr. McKellops was a charter member, conducted the impressive burial service. Mr. John R. Holmes delivered the customary eulogistic oration, after which the members of the lodge dropped their boutonnières of laurel and amaranth upon the casket and the benediction was pronounced by the chaplain, the flowers were heaped upon the newly made mound and we knew that we should see his face no more.

EMMA EAMES CHASE.

CINCINNATI ODONTOLOGICAL SOCIETY'S MEMORIAL TO THE LATE DR. H. J. B. MCKELLOPS. ADOPTED APRIL 26, 1901.

It is with emotions of profound grief that this society learns of the death of Dr. McKellops. To numbers of our members the news brings a deep sense of personal loss. Through association with the local profession as a regular attendant on the meetings of the old Mississippi Valley Dental Association, he made many friends in Cincinnati. In many respects he was a remarkable man. Of his reputation as a dentist it is needless that anything be said. In the dental convention Dr. McKellops exercised over all a peculiar fascination due to his strong personal magnetism. One became quickly impressed with a sense of his straightforward honesty of sentiment, which appeared in his obvious hatred of shams and pretense. Dr. McKellops was a man of keen discrimination, and of settled convictions which he never hesitated to announce without fear or favor. In debate he showed unusual aptitude in extracting the substance of an opponent's argument, recapitulating the points sought to be established, commending or condemning with equal impartiality. His speech was clear, incisive, and in debate often rose to the point of eloquence. Withal Dr. McKellops was a friend to the humblest member of the profession whom he believed to be earnest, sincere and worthy.

Few men of the dental profession have traveled further or explored more thoroughly in remote quarters, in search of improved methods, or to test the merits of new inventions. His judgment in accepting or rejecting these was singularly reliable, and seldom failed to be sustained by the opinions of others to whom he recommended the results of his researches.

In the death of Dr. McKellops the dental profession has lost a member who by virtue of his personal qualities, as well as by the example of loyal adhesion to the highest standards of professional attainments, was an inspiration to all who came within the circle of his influence.

FRANK W. SAGE,
(Copy.) C. M. WRIGHT. } *Committee.*
J. S. CASSIDY.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE CHEMISTRY OF THE DECOMPOSITION OF THE PULP, CAUSING DISCOLORATION OF THE TOOTH, AND THE APPLIED CHEMISTRY OF BLEACHING TEETH.*

By J. P. BUCKLEY, PH. G., D. D. S., CHICAGO, ILL.

There are many sciences connected with dentistry, a thorough understanding of which demands our most earnest consideration. Among these none is more interesting or important than that of chemistry. This underlying science has so many varied relations to our profession, that it would be unwise as well as impossible to attempt to treat more than one in an article to be read and discussed in one evening. I wish, therefore, to briefly call your attention to this one phase of the science only.

My theme will be the chemistry of the decomposition of the pulp, causing discoloration of the tooth, and the applied chemistry of bleaching this tooth, restoring it to its original color.

In order that we may have an understanding of the probable chemical reactions taking place in the decomposition of the pulp, when invaded by a microörganism, we must first ascertain what elements or compounds are found in the pulp tissue and blood within the interior of the tooth. According to eminent physiologists: "Nitrogenous organic bodies take the chief part in forming the solid tissues of the body and are found to a considerable extent in the circulating fluids (blood, lymph, chyle, etc.). Proteid or albuminous substances are the chief of the nitrogenous compounds, and one or more of them entering as an essential part into the formation of all living tissue. The exact formula being unknown, but the molecule is known to contain varying amounts of carbon, hydrogen, nitrogen, oxygen and sulphur."

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*Read before the Odontographic Society of Chicago.

In so far, then, as the chemical constituents are concerned, the pulp tissue differs in no particular essential to that of the other tissues of the body. And in addition to these elements found in the pulp tissue proper, we find in the hemoglobin of the blood the element iron (Fe). The final products formed in the decomposition of nitrogenous organic bodies, such then as is found in pulp tissue, according to the best authorities, are water (H_2O), carbon dioxid (CO_2), acetic acid ($H\ C_2\ H_3\ O_2$), ammonia ($N\ H_3$), carburetted hydrogen ($C\ H_4$), and a semi-putrid substance; and since there is a small amount of sulphur in the pulp tissue, some of the hydrogen evolved in its decomposition undoubtedly unites with this element (S) forming hydrogen sulphid ($H_2\ S$).

In an article by Dr. A. H. Peck of this city, on "Pathology, Chemistry and Therapeutics of Putrescent Pulps," the author made the following statements: "In the decomposition of the pulp the red blood corpuscles are broken up, setting iron free. This unites with the hydrogen sulphid present and sulphid of iron was the result of the chemical union. Reflect," he says, "upon the number of discolored teeth that come under our observation in which it seems certain that the discoloration is effected by some salt of iron." From the above statements, we can only infer that the Doctor refers to the black ferrous sulphid (Fe S), when he speaks of "some salt of iron." I agree partially with Dr. Peck, when he says that the discoloration is due, in all probability, to ferrous sulphid; but must object very materially to his chemistry of producing this substance. First, he states that in the breaking up of the red blood corpuscles iron is set free. This is a very questionable statement to make. Granting it be true, are we justified in making the statement? For should the iron be liberated with the products of the decomposition which are present it could only remain free an instant and should not be so considered. It seems then that in the decomposition of the blood the hemoglobin is broken up which contains the iron; and salts of this metal would be produced other than the sulphid. The statement that ferrous sulphid is produced by the action of hydrogen sulphid on iron is also highly questionable. It is a known fact to the analytical chemist that ferrous sulphid cannot be precipitated from either the ferrous or ferric solutions by an *acid* reagent as this gas; and I do not believe a reaction possible within the tooth that cannot be verified in the laboratory with the same reagents.

That you may be able to follow a chemical theory which I am about to advance, I would have you note the relative amount of nitrogen (N) compared with sulphur (S) found in proteid substances. The former being 15 to 17, while the latter is .3 to 2. Notwithstanding that perhaps some of the nitrogen is utilized in forming oxides of this element, we cannot doubt that, in the decomposition of the pulp tissue, ammonia (NH_3), a compound of nitrogen and hydrogen, is far in excess of hydrogen sulphid (H_2S), a compound of hydrogen and sulphur, both, however, being active chemical agents. Our laboratory experience teaches us that ammonia unites chemically with water, forming ammonium hydroxid—$NH_3+H_2O=NH_4OH$—and this reagent will readily precipitate the salts of iron in both the ferrous and ferric forms, producing, respectively, ferrous and ferric hydroxid ($Fe(OH)_2$, $Fe_2(OH)_6$). The former, a greenish-white substance, readily absorbs oxygen, when in the moist state, and changes to the latter, a reddish-brown substance.

Since ammonia is far in excess of hydrogen sulphid in the by-products formed in the decomposition of the pulp, and has the property of uniting chemically with water, which is always present, forming a reagent, ammonium hydroxid, that will always precipitate the salts of iron, would it not be more plausible to attribute the discoloration of a tooth, from this cause, largely to the formation of ferric hydroxid rather than ferrous sulphid? But admitting, for sake of argument, that ferrous sulphid causes the discoloration, it can only be formed by the hydrogen sulphid acting on the ammonia, producing ammonium sulphid $(NH_4)_2S$.

$$H_2S+2NH_3=(NH_4)_2S.$$

And this *alkaline* reagent will always precipitate the salts of iron; and, in all likelihood, a small amount of ferrous sulphid is produced in this way.

My conclusion, then, is that the discoloration is due, in all probability, to the formation of ferric hydroxid and ferrous sulphid, both being dark substances and formed according to the reactions above explained. The ferric hydroxid, as mentioned before, is a reddish-brown substance and when mixed with only a small amount of black ferrous sulphid makes a mixture of dark appearance, in fact, almost black in color. It appears that the other gases, which are generated in the process of decomposition, cause a pressure which forces this dark mixture into the partially empty tubuli, causing the discoloration. To the casual observer, it might seem as though these substances if formed at all would be in such minute quantities, owing to the amount of iron found in the blood, as to be insufficient to cause the discoloration; but we must not forget the infinitely small dentinal tubuli into which they must be forced in order to produce the darkened dentin.

It might be mentioned in this connection that it is perhaps the pressure caused by these gases which forces some of the putrescent material through the apex of the tooth into the soft tissue, causing the abscess from this class of teeth.

Since we have formulated an opinion as to the possible cause of the discoloration, from a purely chemical standpoint, it becomes necessary to apply the best chemical methods of destroying this discoloration and restoring the tooth to its original color. Many methods have been used in the past, most of which have, seemingly, been unsatisfactory. In any event, I think you will agree that the best method has been that of oxidation; direct and indirect. Let us review the chemistry of these processes. In the indirect one, such chemicals are used as will liberate chlorin gas; the gas, being an active chemical agent, decomposes water, which must be present, liberating nascent oxygen. This oxygen oxidizes the dark coloring matter which is supposed to be washed out of the tubuli. But, is it? We will investigate. In the liberation of nascent oxygen, by the indirect method, no matter what chemicals are used, the by-product is hydrochloric acid, a coagulator of albumin. This gas virtually cooks the semi-decomposed material within the dentinal tubuli, forming a mechanical obstruction, which makes it almost impossible to thoroughly remove the oxidized coloring matter. In the direct method, the various oxidizing solutions have been advocated. The only one worthy of mention, I believe, is the 25 per cent. pyrozone, an instantaneous coagulator of albumin, and also of this semi-putrid substance, and should be discarded on the same ground as the indirect method. I think it can be said, without fear of successful contradiction, that teeth bleached by either of the above methods almost invariably darken after the final filling is inserted. This is certainly annoying and has a tendency to encourage us to crown many teeth that should be filled.

To cite a case. A young lady comes to your office with a cavity in an upper anterior tooth, the pulp of which has become putrescent, either from exposure or too close proximity to the filling. You examine the cavity and tooth structure, notice adjacent teeth, and find this tooth slightly darker, or perhaps, if of long standing, quite dark. You meditate over this case seriously as to the proper course to pursue, since it is your desire to render her, as all of your patients, your best services; the result of which will be pleasing to both patient and yourself. You remember a similar case which came to you a year ago. At that time, you decided to bleach the tooth and insert a gold filling, which was done. When the patient was dismissed, the result was quite satisfactory. A few weeks ago you had occasion to see this patient; examined your work; and, while the filling was preserving the tooth beautifully, the tooth itself presented a sad spectacle indeed. It had darkened so as to be unsightly and very displeasing. You cannot avoid recalling this case when trying to decide what is best to do with the present one. Have you never had this experience in your practice? And did you not feel when you subsequently saw the result of your good intentions and very best efforts that, if you had this work to do again, you would be justified in cutting off the natural crown and replacing it with an artificial one, which you knew would not discolor? Hence it becomes very easy for us to decide to crown these discolored teeth, especially since the advent of porcelain work. While I am an admirer of porcelain crowns, am inclined to think many teeth are crowned that could and would be bleached and filled had we a method of bleaching that would give us the desired results. Such would be lauded very highly by the members of our profession and would certainly fill a long-felt want.

There is a method, not original with the writer, and no doubt not new to most of you, which, from a chemical point of view, I believe to be a correct one for bleaching these teeth. The chemical used is sodium dioxid (Na_2O_2). While it was introduced to the dental profession as early as 1893 by Dr. E. C. Kirk, its use has been more generally advocated in the dental journals within the past few months. That we may obtain the best possible results in the use of this chemical, for bleaching purposes, its chemical nature must be thoroughly understood; and it is to this phase of the method I wish briefly to call your attention, rather than to the detailed procedure. Sodium dioxid is a rare chemical, not that it is difficult to manufacture, but simply from the fact that in the past there has been practically no demand for it. Its chemical activity precludes its use on soft tissue, hence it is scarcely known to the medical profession, and is not kept by the ordinary pharmacist. In fact, it is only briefly referred to in the United States Dispensatory (Seventeenth Edition) under sodium. It is the oxid formed when this element (Na) is allowed to burn briskly in dry air or oxygen. Sodium dioxid is a yellowish white powder and is recommended to be used both dry and in solution (?). Dr. Harold Clark, of Toronto, directs the solution to be prepared in the following manner: "Put two ounces of distilled water in a small four-ounce lemonade glass and prop it up in a basin of water, so that the level of the water in the glass be just below the level of the rim of the basin. Place the latter under the cold water tap, so that a small stream may run continuously into the basin about the glass. In this way its contents are kept from rising in temperature. The violent reaction, when a quantity of sodium dioxid is put in water, raises the temperature of the water, driving off the oxygen, which we desire to obtain in solution. By surrounding the glass with cold water and sifting in the sodium dioxid in small quantities every half hour we obtain in the course of two or three days a saturated solution."

The result of Dr. Clark's efforts in making this solution is a valuable one; but is not, as he claims, a saturated solution of sodium dioxid. Chemically considered, a solution of sodium dioxid in water cannot be made any more than can a solution of sodium chlorid be made in sulphuric acid. None of us would attempt the latter, thinking the result would be a solution of common salt. Water is a positive and instantaneous decomposer of sodium dioxid. That is to say, they act chemically upon each other, and the result of this chemical action depends solely on the way the powder has been added to the water. If added slowly and cautiously, as Dr. Clark recommends, the water unites with the sodium dioxid, forming a solution of sodium hydroxid and hydrogen dioxid:—

$$Na_2O_2+2H_2O=2NaOH+H_2O_2.$$

This, as stated above, is a valuable solution. The hydrogen dioxid will bring about the bleaching and sterilizing, while the sodium hydroxid is a valuable adjunct, as will be shown later. Should the sodium dioxid be added to the water without any precaution being taken to retain the oxygen in solution, a somewhat different reaction takes place. As before the water unites with the sodium dioxid, forming sodium hydroxid, but liberating oxygen, which contains appreciable quantities of ozone (O_3).

$$Na_2O_2+H_2O=2NaOH+O.$$

This ozonized oxygen is a most powerful oxidizing substance. It attacks and rapidly destroys organic matter. It also thoroughly bleaches vegetable colors and most metals are at once acted upon by it. Even metals like mercury, which are not affected by ordinary oxygen, are attacked by ozonized oxygen. It has the power of converting lead sulphid and iron sulphid, insoluble compounds, into the sulphates of these metals, the latter being freely soluble. While good results are obtained by using sodium dioxid both dry and in solution (?), the best and most permanent results, for bleaching purposes at least, are obtained by bringing about the latter reaction, which of course would necessitate putting the dry powder into the cavity and pulp chamber of the tooth to be bleached and adding distilled water to the powder. Dr. Kirk claims that sodium dioxid penetrates the tubuli and dissolves the fibrils as well as the fatty constituents. If so, you can readily see what a valuable property this chemical possesses. I must attribute this property, however, to the by-product formed by the use of the chemical rather than to the chemical itself, which will be shown in the following deductions: When the dry powder is placed in the cavity or pulp chamber of the tooth and comes in contact with organic tissue, which always contains water, or if moistened with water in any way, the sodium dioxid is at once decomposed and sodium hydroxid and ozonized oxygen are the products of the decomposition as above explained. The latter oxidizes the coloring matter, as in the other methods of bleaching, but performs its work more energetically; while the by-product, sodium hydroxid, instead of coagulating the partially decomposed or semi-putrid substance within the tubuli, causing a mechanical obstruction, saponifies the fats and allied tissue, forming a soap which is soluble and can, with care, be washed out of the tubuli with hot water, mechanically bringing with it the insoluble oxidized coloring material. After having saponified and removed the semi-putrid substance and fibrils in the tubuli, thereby obviating the possibility of its becoming coagulated by the presence of an acid, a diluted solution of sulphuric or hydrochloric acid may, with safety, be employed. I say "with safety," in reference only to the possibility of coagulating this substance. Care should always be exercised in the use of any acid on tooth structure. The diluted acid can now enter the tubuli and unite chemically with the oxides that may not have been mechanically or otherwise removed by the saponification and removal of the semi-putrid substance. The salts produced by the action of these acids are freely soluble, and can readily be washed out by the use of warm water.

No doubt you have noticed in this article the reference to the "mechanical" removal of the oxidized coloring material. If our deductions be true, the coloring substances are ferric hydroxid and ferrous sulphid. The action of ozonized oxygen on the latter ($Fe\ S$) would produce ferrous sulphate ($Fe\ SO_4$), a soluble salt and easily removed. But the action of ozonized oxygen on ferric hydroxid would produce ferric oxid (Fe_2O_3), an insoluble compound, and if removed by water must be done *mechanically*.

In my judgment, there remains but one essential in connection with this process of bleaching to make it eminently successful, and the result most permanent. After the tooth is properly bleached by this method, the tubuli are empty; and to retain the color as it now appears, we must have a fine, insoluble, compatible substance which harmonizes with the color of the tooth, and with which to mechanically fill the mouths of the tubuli. Most operators recommend the so-called zinc oxychlorid cement. Some have mentioned balsam varnish to be used in connection with this; but these substances do not fill the requirements. It was for a suitable substance that the writer searched the *United States Dispensatory* for a long time, thinking there must be a material that would meet our demand, if it could only be found. While carefully perusing the pages of this book, my attention was directed to precipitated calcium phosphate. This is a fine, white, insoluble substance, and certainly compatible—it being the very substance of which the tooth is largely composed. Experimenting with this substance, I find it can be made into a paste with water, and by placing this paste into the cavity after the tooth is bleached and applying hot air, then burnishing with a smooth round burnisher, it can be compressed and made quite hard. If this material is carefully burnished over all exposed dentin, a base can be made with the zinc phosphate cement without danger of the tooth rediscoloring.

In looking over the recent literature on this chemical in different dental journals, I notice an article by Dr. Peters, of Syracuse, N. Y., in the January number of *Items of Interest,* in which he makes the following statements: "Contact with moisture immediately sets up a lively effervescence, which is intensified by the addition of an eight or ten per cent. solution of sulphuric or hydrochloric acid." In almost the same paragraph he says: "That where coagulants have been used, the wonderful solvent power of this chemical is such that not only will it dissolve organic matter, but will also dissolve the coagulated albumin." I am inclined to believe that this writer does not thoroughly understand the chemical properties of sodium dioxid or he would not have written as he did. For if water causes a lively effervescence, which it does, it would seem to be a waste of energy to have this action intensified by the addition of an acid. But more than this, and what is of greater importance, to us, the addition of an acid, as Dr. Peters recommends, would destroy the by-product, sodium hydroxid, which dissolves the semi-putrid substance and is the very principle for which we value this chemical so highly. Were it not for this *product,* sodium dioxid would have no advantage over hydrogen dioxid, pyrozone, hydrozone or any of the prepared oxidizing solutions. Other statements were made in this article by Dr. Peters, which are highly questionable, but cannot be discussed here without diverging from our subject.

In conclusion, permit me to say that if the chemistry of this method be understood and remembered in the bleaching of a tooth, discolored from the decomposition of a pulp, and when properly bleached and desiccated, the precaution be taken to fill the mouths of the tubuli with precipitated calcium phosphate, preventing thereby the possible ingress of coloring matter which may cause a subsequent discoloration, the result will be permanent and certainly gratifying.

EXTRACT OF SUPRARENAL CAPSULE AND ITS DENTAL USES.*

By Elliott R. Carpenter, D. D. S., Chicago, Ill.

The history of the suprarenal capsule dates back to 1564, when it was discovered by Eustachius, the great anatomist, who also discovered the tubes leading from the nasal cavity to the middle ear, and named after him, the Eustachian tubes. Little seems to have been written from this time on, until 1856, when Brown-Séquard demonstrated by an extensive series of experiments that the removal of both suprarenal bodies caused animals ultimately to die, in the majority of cases in from one to two days. Harley and several other investigators attempted to prove that animals could live after the suprarenal bodies had been removed, but they have since been proven in error as it has also been proved that the suprarenal capsules, or a portion of one of them at least, is necessary to sustain life. The first examinations into the physiological functions were recorded by Foá and Pelaconi in 1879 and 1883, when they found that an aqueous extract of the suprarenal capsule injected into frogs, rabbits, or guinea pigs, produced diminution of sensibility and ultimate paralysis.

The medical uses of this remedy are many and varied, it being administered very successfully in Addison's disease, congestion of the middle ear, hay fever, local operations on the eye, throat and nose, and in hemophilia. It has no action on the nervous system, therefore no habit can be formed from its use. The dried gland may be made into a solution by taking one part to ten of water, allowed to dissolve for five minutes, then filtered, and should then be sterilized by boiling, but must be used within two or three hours after thus preparing. I am told that Dr. E. Fletcher Ingals, of Rush Medical College, has discovered a solution containing boric acid, cinnamon water, camphor water, and distilled water, which will preserve suprarenal extract in solution for two or three weeks, and this must be of infinite value to rhinologists who are constantly using it in the form of a spray. It may be taken internally in the form of tablets, but should never be given hypodermically. When taken internally it acts as a powerful heart stimulant, but does not increase blood pressure, and can be administered in practically unlimited doses without producing any form of poisoning. The experiments of Oliver and Schaefer are most interesting and valuable from a medical standpoint, but do not add much for dental reflection, so I will not dwell upon them here.

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*Read before the Odontographic Society of Chicago.

The dental application of suprarenal extract is that of a styptic or powerful astringent, and its uses are largely confined to the region of the gingival margins of the gums. I have been using it for about six months and have found it in all cases infallible in its reaction. As a reducer of hemorrhage, its action is both speedy and certain, from one to two minutes being all the time necessary to stop bleeding. When used in combination with powdered crystals of hydrochlorate of cocain, it will produce a deeper seated anesthesia than cocain alone owing to the suprarenal extract contracting the capillary vessels, and thus preventing the cocain from being washed out of the tissues, and this anesthesia is also of much longer duration. There are no ill after-effects, and seldom any secondary hemorrhage, while aseptic healing has been noted in every case. It reduces swelling and produces at least a temporary anemia.

As to the combination of cocain and suprarenal extract and their order of application, there seems to be some difference of opinion medically, but my personal experience has been that by applying the cocain first, and then the suprarenal extract (which I also use in the powdered form), I get the best and most lasting results.

In fitting bands for crowns, in adjusting cervical clamps to marginal cavities, and in the excision of interdental fungoid, I find the solution for both painless and bloodless operations is the use of cocain and suprarenal extract. There are many other conditions and places in the mouth where suprarenal extract can be used to great advantage, as in pockets around teeth affected with pyorrhoea, when desirous of removing serumal calculus, and hemorrhage interferes; a little of the suprarenal extract packed into the pocket will soon cause hemorrhage to cease. I pack the dry, powdered suprarenal extract under the gingiva and sometimes use it on a moist piece of cotton. And here let me add a word of warning—never dip a moist piece of cotton into a bottle containing the dry drug; always place on a slab before applying moisture to it, and always wash the slab soon after using, for a small amount of moisture brought in contact with the powder sufficient to make a paste will produce an aroma that will put a glue factory to the blush.

I wish to acknowledge my indebtedness to W. Scott Harpole,

M. D., who very kindly translated for me the results of many of the German investigators of this most interesting drug, and loaned me several American medical journals containing most valuable articles on this subject.

EMERGENCY CROWNS.*

By J. E. Nyman, D. D. S., Chicago, Ill.

Emergencies are opportunities.

And he who successfully meets an emergency has made the most of an opportunity.

And he who makes the most of opportunities makes the most of his career.

And he who has made the most of his career is the man whose career is successful.

Furthermore we are endowed with intelligence capable of high training that we may train ourselves to meet the emergencies of life as well as the routine prosaical affairs that may come to us day by day.

Because these things are abstract truths, I present to you to-night for your consideration, operations the results of which lack in many ways the artistic and mechanical qualities secured by other operations which consume more time, but emergencies must be met promptly and controlled with as little loss of time as possible and the best procedure for an emergency is that which gives the most effectual treatment in the shortest space of time.

Emergencies are times of stress when the "strenuous life" in its most acute form is experienced, when the muscles and nerves are strung to highest tension and a half an hour of an emergency which one at loss how to treat will last any one, even a healthy dentist, for a week.

And so I feel justified in spending time, thought and energy in devising and trying methods designed for emergency cases and inviting you to do the same in consideration of methods the results of which are not permanent and lack many artistic and mechanical qualities.

The loss of a crown of an anterior tooth from its root is at any time an unfortunate affair, but at certain times circumstances may be such that to the individual suffering this loss, it is nothing short of a calamity.

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*Read before Odontographic Society of Chicago.

For not only is one disfigured and made repellant in appearances, but the derangement of speech, the ineffectual idiotic attempts at enunciation are not only ridiculous and embarrassing to others, but doubly embarrassing and humiliating to the unfortunate one.

Fancy the feeling of a prima donna who, meditatively biting on the pearl handle of a penholder as she ponders over a letter she is writing, bites a little too hard, hears a snap and feels a shock, and finds that frail central she has been told to be careful of, laying on the writing paper before her.

Well, there is an hour for repairs—it will take a quarter of an hour to reach your office, another quarter of an hour to get back to her hotel, there will be just one hour to spend in your chair while you operate—tell me, are you prepared to do it, have you any preconceived plan ready to put into operation, can you succeed within that time, so that she may appear and gloriously acquit herself that night, so that you will win her gratitude, have her regard you, speak of you, and recommend you as the most skillful man in your profession, because in any emergency when "things hung in the balance" you were tried and not found wanting.

Consider another case, that of an attorney, who, while at lunch nibbling the meat off of a chicken bone, fractured the left upper lateral; in a little more than an hour the court would reconvene the jury to listen to the remainder of his closing speech, begun that morning and upon which hung the liberty and perhaps the life of the man on trial.

Picture to yourself a man rushing into your office worried almost to a frenzy, the cold perspiration standing out on his face; you know him to be the general manager of a large corporation; before he has said or attempted to say two words you know he has a central missing, and you finally make out from the confusion of sounds that just a few minutes before in biting off the end of a cigar he broke off his front tooth. In just one hour, at eleven o'clock, there occurs the annual meeting of the stockholders of the corporation in which his all is invested and to which he has given the best years of his life; a faction of the stockholders, antagonistic to him, has succeeded by various means in inducing a number of the others to join them, and have succeeded in so shaking the confidence of a number of others, that they are undecided as to what they will do—at the meeting so soon to occur he must be able to convince the wavering ones that his policy, methods and his deeds were and are for the best; to secure their support and their ratification or he is a ruined man.

He is ruined if he does not appear; his opponents will make capital argument out of his absence, no matter what excuse may be offered.

He is ruined if he does appear looking like an idiot and unable to make the plea so full of logic and sound common sense that he has been weeks in preparing for the hour almost at hand.

"For God's sake, can you help me out?" And then—then you realize that you are confronting an emergency which may become a tragedy.

These cases that have been cited to you are not imaginary, but are cases from the writer's own practice and that of some of his intimate friends.

Are you prepared to give the unfortunates in cases like these the help they seek? If not, then I am prepared to give you a method for constructing an emergency crown that has never yet failed to tide the patient over the critical period.

But first a word in regard to emergency crowns in general. What qualifications should they possess?

They should be of such a nature:

1. They can be constructed and set in a half hour.

2. They will be secure in their position.

3. They will not be an impediment to speech.

4. They will approximate the adjacent teeth in form and color so that a glance will not disclose their artificiality.

5. They can be readily removed when it is desired to construct and set a permanent crown.

Others have appreciated the necessity of providing for emergencies like these and have devised certain emergency crowns.

Some have suggested making use of a Logan crown, but that necessitates the taking of impressions and construction of models, consumes too much time and is too difficult of removal.

Another gentleman has advocated fitting a post in the root, taking an impression and running a model with the post imbedded in position, grinding a facing into position, waxing it in place, running some newly mixed plaster over the face of the facing and the faces of the plaster teeth, removing the wax and flowing in some fusible metal like Melottes' or Stafford's about the post and pins; or else packing in some amalgam after the metal cools or the amalgam hardens, as the case may be, remove the plaster investment, grind and polish and set the crown with either gutta-percha or cement.

But the objection to this method is that, like the Logan crown method, it necessitates the taking of impressions and running models, which consumes too much time and it is too difficult of removal.

No method which necessitates the taking of impressions and construction of models is a good method for emergency crown cases.

Some two years ago Dr. W. H. Taggart, of our city, devised and demonstrated an emergency crown which is far ahead of those mentioned.

The method is as follows:

Trim the root off at the gum line, enlarge the pulp canal, cut two shallow pits in the root on either side of the pulp canal buccally and lingually, the space is measured and the shade selected, and a facing is procured from the dental depot if you do not happen to have one in the office.

An iridio platinum post is fitted in the enlarged root canal and allowed to project about a quarter of an inch above the root; this end is flattened and notched on the mesial and distal edges, the pins of the facing are fitted into these notches bent around the post, the facing laid face down on a piece of soft wood and the pins clinched tightly about the post by means of a small riveting hammer (there is practically no danger of fracturing the facing in doing this, although one who had never tried it might think there was). This gives a short union between post and facing, the root canal is reamed out and the post and pins bent until the facing is in the proper position when the post is in the canal. When this has been accomplished a quick-setting amalgam is packed in on top of the root and around the post and pins and as it sets it is trimmed and contoured to resemble the lingual side of the crown. After it has set so that there is no danger of crumbling, the crown is removed—there will then be found two little projections on the lower side of the crown that fit into the shallow pits before mentioned and which act as a guide in inserting the crown.

The crown may then be set with either gutta-percha or cement—gutta-percha, of course, being preferred by Dr. Taggart.

The only objection to this method is the time required to fasten the pins and post together, and adjust the facing and post to the adjacent teeth and the root canal and the setting of the amalgam. Still I should regard this as the proper method if I did not know of a better one—better, because it takes less time, less fitting and gives equally good results.

It is a method which, so far as the writer knows (and he has searched in vain for evidence to the contrary), is original with him.

As a rule the pulp has been devitalized before the accident has occurred. If not, then it is necessary to resort to heroic measures and with the use of cocaine remove the pulp at once.

Grind the root down to the gum margin, measure the distance from the gum margin to the incisal edge of the adjacent tooth and the width of the space where the crown is missing, select the proper shade and send to depot for a suitable facing, if you have not one at hand. While a facing is being selected enlarge the root canal to the proper depth and adjust a post of such length that the lower incisors will not strike it as they articulate, and set back in the root far enough lingually so that it will not force the facing out of the line of the arch; flatten slightly the projecting end of the post and roughen the section to be imbedded in the root; fill the root canal with a large, soft, gutta-percha cone; heat the post, grasp the flattened end with a suitable pair of pliers, force it to its place in the root canal and trim away the surplus gutta-percha; slightly roughen with a coarse sandpaper disk the interproximal contact points of the adjacent teeth. The facing should have arrived by this time; grind it to fit properly, roughen the back on the facing with a carborundum wheel and bend down the pins so that they are at an angle of about 45 degrees to it.

Dry the facing, the adjacent teeth, the post and root thoroughly, mix thickly some of Ames' quick-setting cement—coat the back of the facing and cover the end of the root and post with it, then force the facing into this mass of cement and hold it in position until the cement has set slightly; coat the cutting edge of the lower incisors and have the patient bite, then opening the mouth trim away the surplus cement, clean out the interproximate spaces and contour as you please, but leave the cement adhering to the interproximate contact points to give greater security of retention. By this time the cement is quite thoroughly set and the patient may be dismissed.

The time consumed in this operation should not be more than a half hour if you are within three blocks of a dental depot, and you may accomplish it in fifteen minutes if you have the facing at hand.

It is the writer's practice to keep a number of sets of the six anterior teeth and the first bicuspids of various sizes of average shades, as well as posts of average size, flattened and roughened, constantly on hand for just such emergencies as these.

This method is always used whenever a permanent crown is being constructed for any of the anterior teeth, allowing the operator to complete the crown at his leisure and permitting the use of time necessary for complete artistic results.

The operator much prefers to set an emergency crown than to attempt to complete a permanent crown at one sitting, because the result of these hurried operations is never all that could be desired.

Patients lose much of their dread of the crowning operation if they are assured beforehand that they will not be obliged to go toothless for several days.

A temporary crown will hold the gums away from the root so that the final setting of the permanent crown is attended with much less difficulty for the dentist and much less discomfort to the patient.

THE EVIL RESULTS OF EXTRACTION.*

By J. N. MacDowell, D. D. S., Chicago, Ill.

A definite law cannot be laid down for extracting teeth, either temporary or permanent. Suggestions can only be offered for extraction according to the individuality of the case and the conditions liable to be established, favorable or unfavorable as the result of the extraction. Dentistry is a science that is being promoted for the purpose of preserving and restoring the teeth, as an aid to mastication, enunciation and facial adornment. Every tooth is a valuable key in sustaining the harmonious relationship of the arches, and the loss of a tooth in either arch affects both arches proportionately to the size and position of the lost tooth.

Temporary Teeth.—The eruption of the first temporary tooth takes place at about the age of six months and the last at about the age of three years. The first temporary tooth is thrown off by the normal process of nature at about the age of six years and the last about the age of twelve years. If a temporary central incisor is lost by extraction or is knocked out by a blow at the age of four years, the permanent teeth would undoubtedly come through malpositioned for want of space, due to an undeveloped condition of the alveolar process; for at the age of four years only about one-half of the

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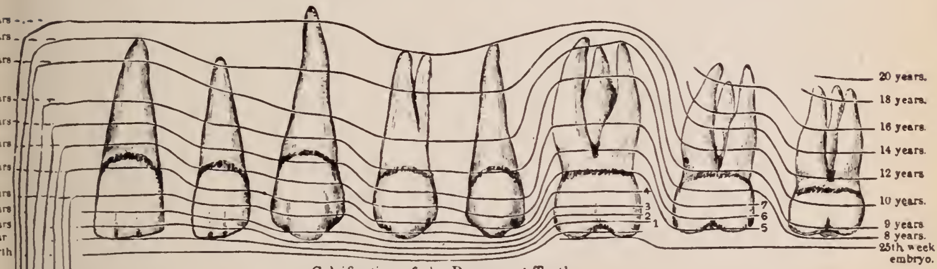
Read before the Odontographic Society, Chicago.

crown of the permanent tooth has developed. This half of a tooth is so frail in structure and so deep seated in the process that it is impossible for it to sustain itself at the point where the temporary tooth was removed; the alveolar process at this point collapses and is filled in with osseous structure instead of developing for the accommodation of the larger permanent teeth, and finally the permanent tooth erupts, rotated or malpositioned for want of space.

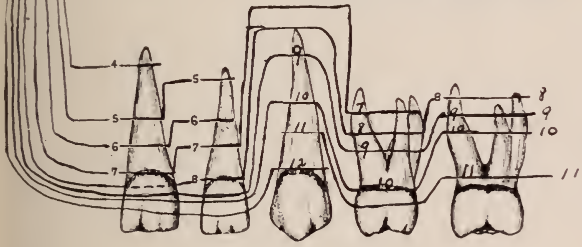
If, on the other hand, at the age of five or five and a half (considering that the other parts are normal) the tooth has developed the full crown; it has then come up near enough to the border of the alveolar ridge to sustain its own space and will erupt in normal position. If the teeth, alveolar process and jaws are developing normally and are not acted upon by neurotic conditions, temporary teeth can be extracted from one to one and a half years, according to the tooth and position, before the eruption of the permanent teeth, and the permanent teeth will undoubtedly erupt normally. If, however, the development of the teeth and anterior part of the process is beset with some neurotic condition, in most every case there is not even sufficient room for the permanent centrals, laterals and cuspids, even if the temporary teeth are retained until the permanent tooth makes its appearance, consequently the case requires mechanical assistance. The temporary molars, however, are so much larger than the bicuspids of the permanent set that if they are extracted from one to two years before, there is still sufficient space for the eruption into normal position of the bicuspids. If, however, there is abnormal development of the process, the extraction of the temporary molar one year or six months before the time of eruption of the permanent teeth, may in many cases interfere with normal eruption, which then creates a demand for mechanical assistance to aid the proper eruption of the bicuspids.

There is one sure sign that the alveolar process holding the temporary incisors is developing normally for the accommodation of the larger permanent teeth, and that is when the upper and lower temporary incisors begin to separate about the age of five years or a little later. This separation or development of the alveolar process goes on until nature has prepared sufficient room for the eruption of the larger centrals, laterals and cuspids. The temporary incisors stand apart from one to one and a half millimeters, which proves that when the arches are developing normally the temporary incisors do not need interproximate contact to sustain them in position. The extraction of the temporary incisors at this stage would have no perceptible effect upon the eruption or position of the permanent teeth, for by the proper physiological development the process is being properly enlarged for the accommodation of the permanent teeth.

That the extraction of the temporary teeth at certain ages will cause malocclusion of the permanent teeth is an undisputed fact. The extraction many times may be for the want of proper instruction or pure carelessness, or it may be the result of necessity from disease, etc. The writer believes that unless the extraction occurred one and a half years or more before the proper development of the permanent teeth that malocclusion of the permanent teeth would have been established in a great many cases even if the temporary teeth had never been extracted. It is the failure of the proper development of the alveolar process that causes many forms of malocclusion that are allied to other reasons. Cases where too long retention of the temporary teeth causes malposition of the permanent teeth is the result of pure neglect on the part of the parents to take the child to the dentist. In cases where the temporary teeth are retained until after maturity it is best to allow them to remain in preference to extracting and substituting with artificial teeth



Calcification of the Permanent Teeth.



Decalcification of the Deciduous Teeth.

Deductions for the special cut was made from Dr. G. V. Black's original charts of "Calcification and Decalcification of the Teeth."

Temporary teeth that are giving children a great deal of trouble should be treated again and again and every possible means taken to retain the temporary teeth by continuous treatment if by no other way. If, however, the permanent teeth have developed sufficiently, (referring to chart) Fig. 1, and the process indicates good development, one need not hesitate to extract decayed temporary teeth from one to one and a half years before the appearance of the permanent teeth.

Permanent Teeth.—The extraction of the permanent teeth that so often wrecks the harmonious relation of the arches, is usually confined to the distal teeth. There may be cases occasionally where extraction of one or two of the permanent teeth may be necessary as a result of arrested development of one or both arches, crowding the teeth to such an extent that to align them would be to affect the facial appearance by bulging out the lips. In children an attempt should be made to align the teeth first, and then if the operator feels that to align all the teeth would distort the facial appearance, the extraction of one or two teeth would undoubtedly be the proper course, but should only be decided upon after thorough study and investigation.

Owing to the fact that the majority of parents consider that the first permanent molar is only a temporary tooth they are often allowed to decay and be removed at the first sign of trouble. Perhaps time and proper advice from dentists will erase this folly. When teeth are extracted in children, the space may or may not close in a few years, but the inharmonious relationship of one arch to another has been established and it becomes necessary to remove a tooth in the opposite arch to harmonize the conditions; or, to enlarge the arch and replace the lost tooth with an artificial one to sustain the harmonious relationship.

When it becomes necessary from acute forms of disease to remove a tooth, it is always best to preserve the harmony of the arches by saving the space with bridge work, or, temporarily, at first, with a plate. This prevents the migration of the teeth in that vicinity, which is sure to follow on account of the stress from mastication. If humanity in general deplored the loss of a tooth as much as the loss of a finger, more care and consideration would undoubtedly be given to the care and preservation of children's teeth, which in time would undoubtedly reduce the demand for extraction as the result of caries, etc., to a minimum.

Often the question arises, if a tooth is extracted in one arch, is it necessary to extract in the other arch? Some of the important conditions that may necessitate extraction are, 1st, where there is a crowded condition after maturity and where alignment would only disfigure the features; 2nd, from the delayed eruption of a tooth. Cuspids and incisors, as a rule, are never extracted, but in case the first bicuspid has moved forward and the lateral backward until they touch and the individual is an adult. In rare cases it may be deemed advisable to extract the cuspid. As a rule, cuspids should not be extracted except in the rare case cited above. Otherwise the preference is to extract bicuspids. In the lower arch, if the inequality is confined to the anterior teeth as the result of the delayed eruption of a cuspid in the upper, it may necessitate the extraction of a lower incisor, or at least a tooth that will favor the condition for the harmonizing of the arches; 4th, in case of disease or acute pain, one is compelled to suffer the loss of a tooth, it is best to impress upon the mind of the patient that the space should be preserved by artificial teeth for the sake of mastication, harmony of the arch, and as a preventive against migration of the teeth in the future, which, if allowed to take place, either in children or adults, will effect the occlusion of the teeth proportionately.

A SYSTEM OF RETAINING SPRINGS FOR PARTIAL PLATES AND REMOVABLE BRIDGES.

By W. E. Griswold, D.D.S., Denver, Col.

(Second Article.)

In my former article I described my system in so far as it was applicable to roots where the crown was entirely removed.

In this I will describe its application to teeth simply ground down and gold crowns placed over them.

For this work I use a different form, made of the same metal, a wedged-shaped U spring, with a depression in its side, made in three sizes—a small size for bicuspids, the second size for molars, and also used as a box for the small size, and the third size as a box for the second.

These are all made in steel dies, and one exactly fits over the other, and when so placed, on account of the depression in the sides, locks the finished denture in place.

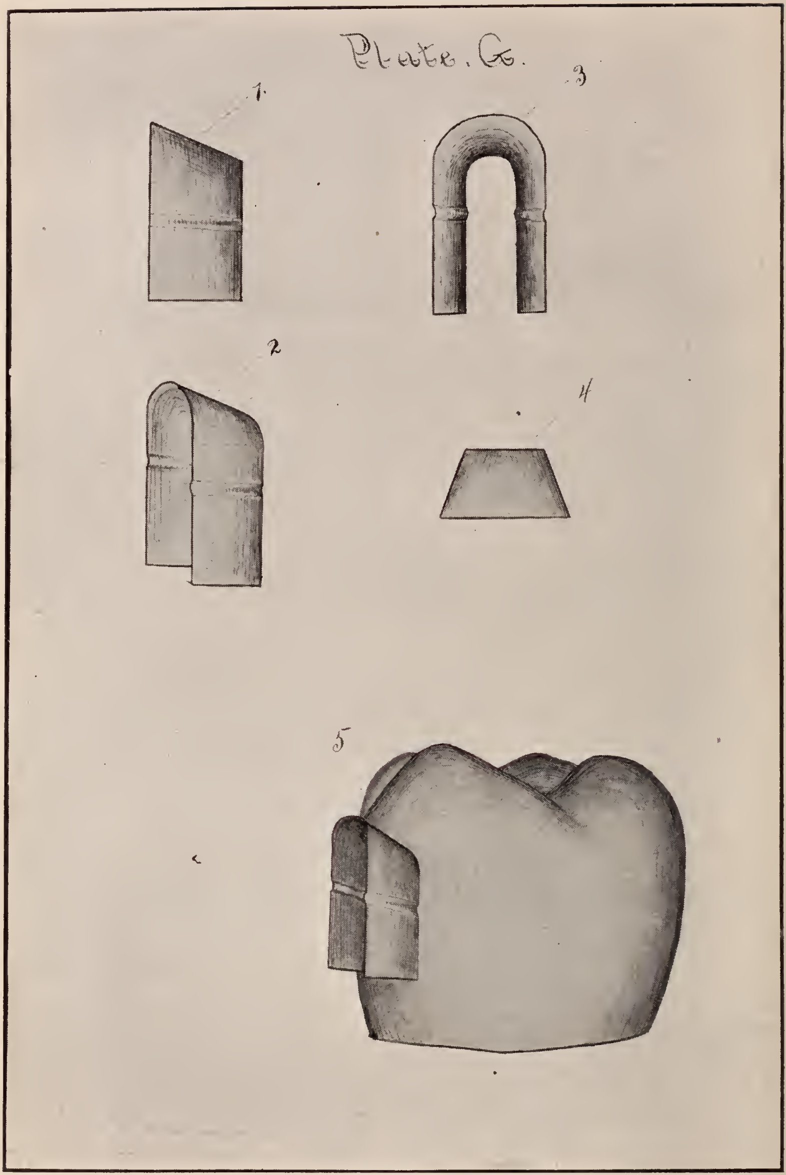
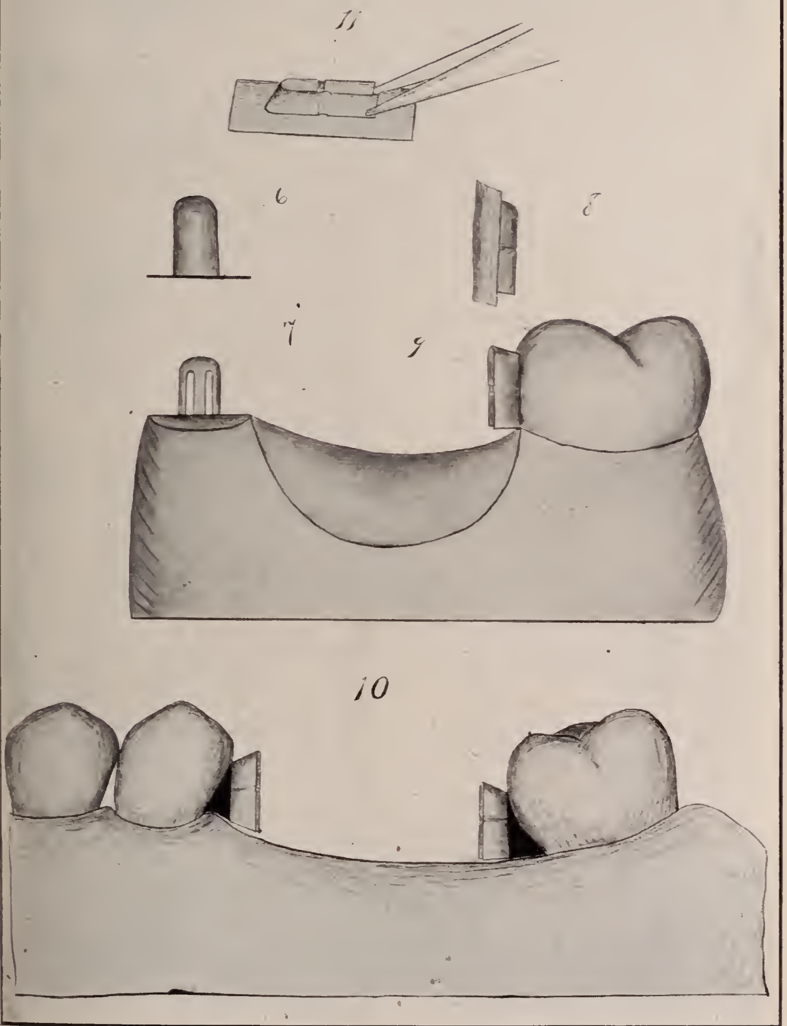
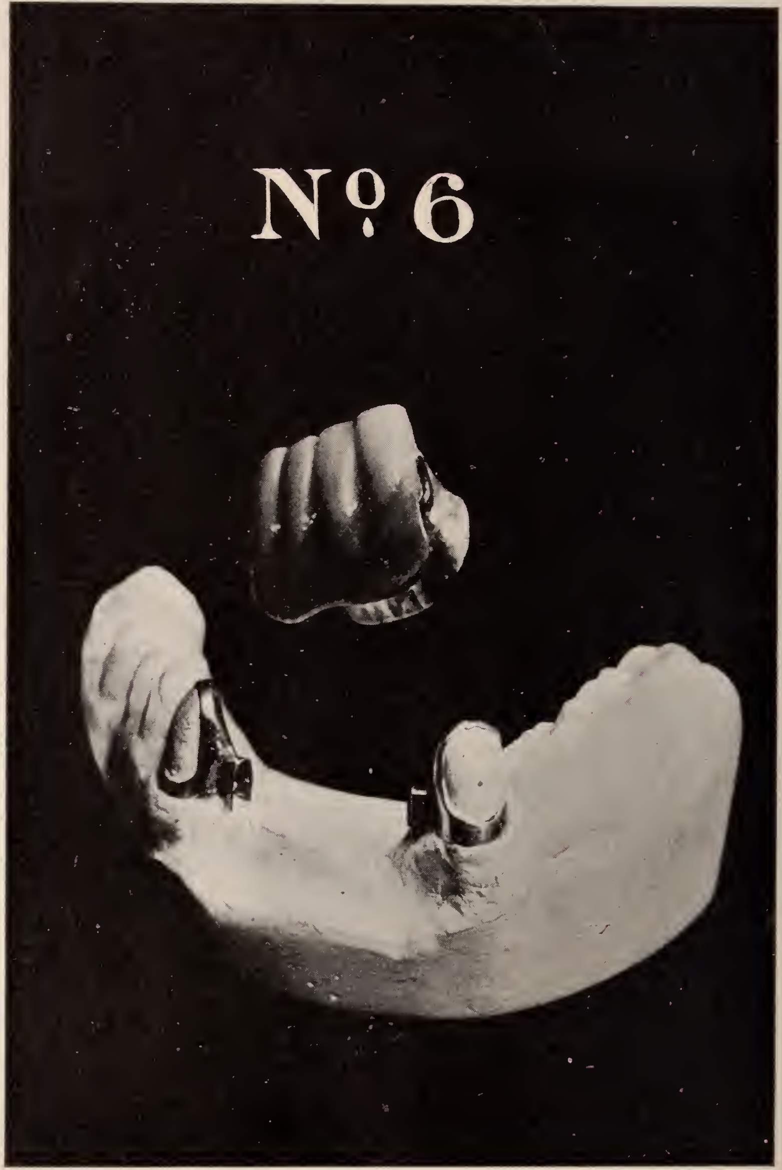


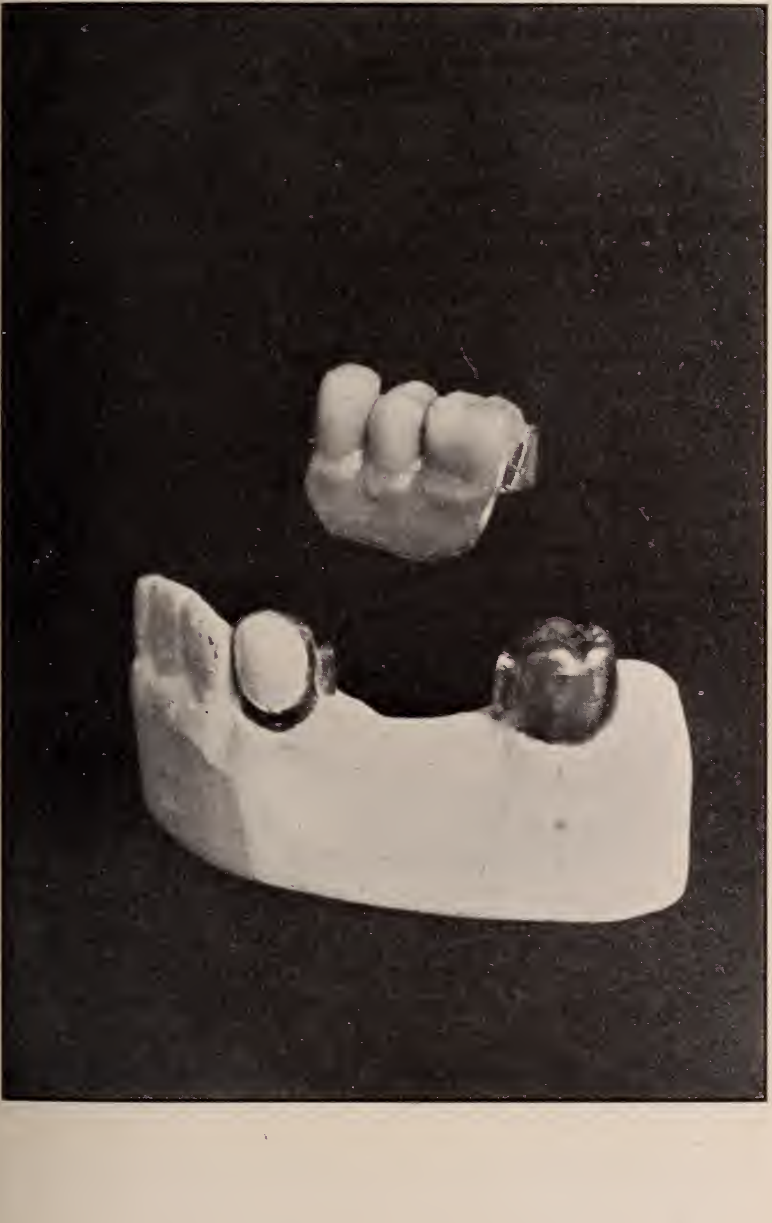
Plate. G.

Plate. G. Contd.



No. 6





This spring is shown in plate G. No. 1 is a side view, No. 2 a three-quarters view, No. 3 a front view, No. 4 a top view, No. 5 a three-quarters view soldered to the crown.

With the outfit comes two soldering chucks for holding these springs in perfect alignment, by means of a soldering jig, illustrated in previous article. One for the small size, one for the second size. One for the third size is not needed, as it is only used as a box for the second size.

In constructing your bridge, after crowning your teeth, take an impression in the usual way. Before pouring the model, place your wax inside the contoured portion of the crowns so that when this wax is melted the crowns can easily be removed from the model without breaking it. Then make a model of sump, or Brophy's compound, or other non-shrinkable material. After the model is made, warm the caps, remove them, melt out the wax, replace, shave your model smooth and level on the bottom, and as I have said before, if you wish your finished case to go in first on heel or toe or side, shave so it will tip a little that way. Now fasten on jig as before.

Select the size of spring which will least be in the way of your teeth, either No. 1 or 2. Take this spring and pass it through the flame of a Bunsen burner, until it is a dull red, to anneal it, then file it to the proper length to fit the crown, up end it on a piece of gold, drawing the open ends slightly together, so that it will be a bit narrower at its base than at the upper end, and solder on the inside.

Now take this and lay it narrow side down on another piece of gold plate, fitting it perfectly. Flux it, placing a very little solder inside again, fuse it over Bunsen burner, soldering the two firmly together, not allowing the solder to flow up on the spring any more than can possibly be helped. Now place this in its proper soldering chuck, put this chuck in jig chuck, bring it to the position on the mesial or distal side of the crown you wish it to occupy. By soldering this piece of plate on the side of the spring coming in contact with the crown, it reinforces the crown at this point. This enables it to resist the force brought to bear on it in mastication. You now take the next size, slip over it, filing to the same width and length, lay this on a piece of plate, as at 11 G, and springing the ends slightly together with pliers, and holding in this position with them, as No. 11 shows, solder on the outside, previously placing inside some whiting dissolved in alcohol, to prevent any possibility of the solder flowing inside, and spoiling the perfect fit of this box for the spring. Now remove your crown from the model, which is easily done on account of the wax having been melted, now force the box over the spring stud. It will probably go over very hard and stiff. Sometimes it will be necessary to use a pair of pliers to force it on and remove it, but after doing this two or three times, it is put on and taken off more easily. But the perfect adaptation which you get in that way is essential to perfect work. Plate G shows a model with gold crown at one end with spring soldered to it; box 8 ready to go over it and be fitted to the saddle, shown in position on the model; at the other end stud 7, soldered to a root cap, with its crown, plate 6, ready to slip over it. When both are in position you take an impression as before with sump of these parts on the model. When hard remove and solder all three parts together, the crown, plate 6, the box, 8, and the saddle.

Now place your abutments on their respective teeth or roots, put your saddle with its abutments, Nos. 6 and 8, soldered to it, in position, take a bite, and your impression, make a model of plaster, set up on an articulator, and proceed to finish the work in any way you like.

At 10 is shown a model with abutments setting at an angle, the springs soldered on parallel, and the space between the spring and cap filled in with plate and solder, making a very solid attachment.

In making this attachment, remember that the spring is altogether in compressing the outer edge, or larger diameter of the U-shaped wedge spring. The box must be made in such a way as to compress its sides when it goes over, and be rigid.

My claims for this system are, the ability to restore the contour of the soft tissues and give harmonious expression to the face; ability to avoid the display of gold, and to make with porcelain the most artistic and lifelike denture known.

Second, even in the cheapest work, vulcanite, give your patrons something much more artistic, something held firmly in place, but removable by the patient for cleansing, and the occasional rest which the abutments need to restore to normal tone the overstrained surrounding tissues. It also divides the strain between the abutments and the edentulous parts, also to make a temporary denture which will not irritate the recently lacerated tissues, and can be replaced at any time with more permanent work, without changing the abutments or attachments. The attachments hold with more tenacity than is necessary, but the tension can be made greater or less according to the strength of the abutments.

It affords opportunity to bridge space not possible by any other system, and attachments can always be tightened, should they wear loose; the spring studs by slight tap on the end; the U springs by spreading a little with a pair of pliers.

THE USE OF THE LANTERN IN TEACHING DENTAL HISTOLOGY IN ITS RELATIONS TO OPERATIVE DENTISTRY.*

By F. B. Noyes, D. D. S., Chicago, Ill.

The discussion of this subject requires at least a brief consideration of the position and importance of histology in the dental curriculum, and the methods of teaching it. The importance of the subject in the curriculum depends upon the attitude taken toward the practice of dentistry. If dentistry is regarded as a mechanical trade, consisting in filling carious cavities in teeth and replacing lost organs by artificial substitutes, histology is likely to be regarded as having a very small place in its curriculum; but if dentistry is a profession whose field is the treatment of the diseases of the human mouth, especially caries of the teeth and the maintenance of a useful armature for the mastication of food, histology must be considered one of the very foundation stones of its professional knowledge.

With the development of modern biology all of the problems of physiology have been restated in terms of cell physiology; and all pathology reduced to cell pathology. The knowledge of cell structure must then, with the dentist as with the physician, be the rational basis of treatment of all diseased conditions of the tissues. Not only is this true but in mechanical operations upon the teeth their permanence and success, as well as the rapidity of their execution, depend very largely upon a minute knowledge of tooth structure. It is not necessary to insist further upon the importance of the subject to the practitioner as an individual or the profession as a whole.

It is a principle in biology, now generally accepted, that the individual in its development from a single cell repeats the evolution of the type from the simplest forms, or ontogeny repeats phylogeny; although in the higher forms the development which required ages for the type is crowded into a few months or weeks for the individual. Similarly it is a law of the psychologist and pedagogist that the mind of the individual in its development repeats the development of human thought; only what required ages or centuries to be mastered in the first instance may be passed over in a few months or years. In this sense knowledge cannot be handed down, but the road to it may be shortened.

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*Read before the Institute of Dental Pedagogics.

A man's work cannot be handed down as something finished and complete. In order for it to be understood, enough of his work must be repeated to have his thought become fully intelligible to succeeding thought. But what one man worked perhaps a lifetime to establish, may be demonstrable in a week. All of the blind trails, all of the fruitless labors, all of the slowly corrected fallacies are eliminated and his work may be repeated and his statements understood with the same meaning in a very short time.

His statements alone cannot be handed down as knowledge, for unless the individual mind passes over the things which first lead to those statements they cannot be appreciated or understood. In other words, they do not become the working property of the mind until the individual has developed them for himself, though the road once traveled may be rapidly traversed by those following.

Some of the gravest fallacies of human thought have arisen by this lack of true knowledge. Statements being taken empirically and made *a priori* basis for deductions where the meanings of the premises are really entirely changed or misunderstood. Examples of this may be seen again and again in dental literature.

Histology, literally the science of the tissues, is the study of the structural elements of the organism and their arrangement to form the tissues and organs of the body. It is one of the younger of medical sciences, but has come to be one of the most fundamental in modern thought. In the development of medical thought it was lead up to from two directions. The anatomists arrived at the very threshold of modern histology from the analytical study of the body and its organs, and here they were obliged to wait for the development of the microscope to show to the senses what they had already logically proved must exist. The biologists and pathologists, the students of life and disease, were led to the cell theory, especially in the study of the causes of disease, but they too were obliged to wait for the development of the microscope. It is true, however, that the development of the knowledge of the cell and cell life was made by the biologists first and later carried on by the anatomists. Single cells were known and studied before the tissues were thought of as made up of aggregations of such cells.

But while the development of thought has been from the single cell to aggregations of cells, the study of single cells was preceded by the morphological study of many higher forms of life, their vital functions and the analytical study of the structure of their bodies.

Histology then should be preceded in the course of individual development by the study of living forms; for instance, botany, beginning with the observation of the forms of leaves and stems and flowers; then the analysis and classification of flowers, using a simple microscope or hand magnifier in dissecting and observing the parts. In this way through smaller and smaller forms to the single celled plants and animals of pond and ditch life. The student is first led to observe the forms and structure of living things, the vital properties which distinguish them from inorganic matter, to analyze their structural parts, noting similarities and differences, and by studying smaller and smaller forms of more and more simple structure till the simplest forms of single cells are reached. This is the path which human thought has followed in the development of human knowledge. Then an ascending study begins, taking up the structure of higher forms in terms of their structural elements or cells.

There is perhaps no teacher in a dental school who feels the lack of sufficient preliminary training in our students so much as the professor of histology. He is obliged to jump the natural development as if we were to put a fifteenth century botanist into nineteenth century study of botany.

In view of this general lack of training there is, in my experience, no introductory work to general histology so good as the study of pond and ditch material. Here the student finds comparatively large forms and single cells which are big enough to be seen with the unaided eye. Here, too, he finds cells associated into threads, sheets and masses and so is led up to the formation of tissues.

Here he has an opportunity to study the properties which distinguish living from non-living matter, and may gain his first conception of the mechanism of life.

This as an introduction leads to the study of epithelial tissues, followed by the other elementary tissues, and the study of the relations between cells as centers of activity and their products in formed materials which constitute intercellular substances. The last part of the course, of greater or less extent, for the study of the relations of these tissues to each other in the formation of organs.

The following of such a course through one year should put the student's knowledge of physiology and the phenomena of life upon the basis of cell structure and cell activity, and prepare him for the closer and more difficult study of the tissues with which he will specially have to deal. The relations between cellular and intercellular elements in the formation of tissues belongs to general histology; that is, the distinctions and relationships between vital and physical, between the active, living protoplasmic elements and the formed materials produced by them. These formed materials are such important elements of the special dental tissues that unless these relationships have been kept in mind in the general work the student will not be in mental condition to understand and interpret his observations.

METHOD.

It would seem unnecessary to argue before this organization the advantages of the laboratory method over other methods in the study of histology.

In histology the student is studying things, minute though they are, and their relations, to form large and more easily observed things. Very few persons possess sufficient imaging power to construct a mental image from word descriptions alone or by the aid of pictures; especially is this true where all the descriptive terms are new and the standards of measurement unknown. To form a true conception of the size of the things studied, is one of the most difficult things in connection with the subject; even by the laboratory method it can only be done by the use and comparison of various powers and by making drawings as accurately as possible to scale.

By the lecture method, illustrated by lantern or chart, the student is apt to think of things in the size of the picture, or in section only. In other words, they may learn a great deal *about* the things studied, but they do not know the *things*. They learn the appearance of sections, but they do not get ideas of structures in their dimensions of space. Even photographs cannot give complete ideas of structure. As has been said, "photographs give single fields accurately, but it is with the fingers on the fine adjustment screw that we study the structure of a tissue." To one who has so studied the tissue, the photograph may be nearly as good as a view of a microscopic field; but to one who has not such study back of him, they are not capable of giving the ideas of structure. A comparison occurs to me. The moving pictures which are familiar to all are made up of a series of photographs; if seen one at a time they convey no idea of motion, but if seen in rapid succession the motion appears. So single fields give no idea of the third dimension, but by moving the focus the ideas of depth and relation are obtained.

Dental histology is doubly important to the practitioner for a knowledge of the structure of the dental tissue and the surrounding and supporting structures must be not only the rational basis of dental pathology, but the foundation of ease, rapidity and success of operating.

In view of the importance of the subject, the study of dental histology has, in my opinion, been somewhat slighted in the arrangement of dental curricula. In many cases it is not taught as a subject, but something of enamel structure is given in connection with operative technic and operative dentistry, and possibly dental pathology, and so on, in other subjects, individual teachers, giving some instruction in structure as an explanation of their teaching, instead of studying the structures consecutively and connectedly as a foundation for interpretation of dental physiology, pathology, and technic of treatment.

The course in dental histology should take up the subject where dental anatomy and general histology leave it, studying first the arrangement of the dental tissues in the formation of the teeth; then the minute structure of the calcified tissues, beginning with the dentine and cementum, following with the enamel. The hard tissues should be followed by the soft tissues, the pulp, and the surrounding and supporting tissues, gum, periosteum, and peridental membrane. This study of structures should be made in its connection to physiological, pathological and technical bearings.

The uses of the lantern might be treated under two heads:

First, as a means of presenting ideas of structure in connection with word descriptions in lectures, and second, as a means of assisting the interpretation of microscopic observation in the laboratory.

STRUCTURAL ELEMENTS OF THE ENAMEL.

The physical properties of the enamel which are of importance to us in the mechanical handling of the tissue are due to the nature and arrangement of the structural elements. The enamel is not a homogeneous substance, but is made up of long, slender rods or prisms, sometimes called enamel fibers, which are five or six sided, usually pointed at the ends, and alternately expanded and contracted in their length. These rods are from 3.4 to 4.5 m. in diameter, and many of them probably extend from the dentine to the surface of the enamel.

These rods are arranged so that the expansion in one rod comes opposite to the expansions of the adjoining rods, and they are united by a cementing substance which is also composed of inorganic material. While both the rods and cementing substance are completely calcified, the two substances show marked differences, both chemical and physical. The cementing substance is more rapidly acted upon by acids and is not as strong as the substance of the rods. The substances are also of different refracting index. In splitting the tissue it separates upon the lines of the cementing substance, not at the center of the rods.

The lantern is able to well convey these ideas of structure. We may show, first, enamel rods as seen isolated by caries and as seen in transverse section, projecting photographs of drawings made to show the elements diagrammatically, and follow these by photographs of the sections from which the drawings are made. Then we may show the arrangement of the rods and their relation as seen in their longitudinal sections. The expansions and constrictions of the enamel rods and the relation of the rods to each other in the make up of the tissues cause the appearance of striation, seen in the enamel with comparatively high magnifications. These expansions also record the manner of development of the individual rods.

The conspicuous brown bands known as the lines of Ritzeus, stratifications, or incremental lines, are well shown with lower magnifications. They are due to pigment deposited with the inorganic salts and record the development of the enamel cap as a whole. They are of special interest as a record of the growth of the tooth crown and the position and direction of imperfections of structure caused by interrupted nutrition.

If the student's knowledge is obtained from lantern pictures alone, he fails to get any conception of the size of these elements and their relation to the tissue, as he will handle it in gross, use what means we may to convey ideas of magnification. If, however, he looks at a section of a tissue, places it upon the stage of a microscope and uses successively higher and higher powers until the elements can be seen, draws a few as they appear and figures out from the drawings and the magnification the size of the object and the size of the paper required to draw the entire crown at the same scale, he has gained ideas of structure hardly to be given by lantern pictures alone.

The best means which I have found for conveying ideas of size with the lantern is the use of photographs of a stage micrometer made with the same magnifying power as the photograph of the tissue, using these as a ruler on the screen. In using these it is necessary to start from some known standard, as the millimeter; using first a power low enough to show the entire scale. But this is a great tax upon the imaging power of the students. It is also of great assistance to compare structure to some known or previously studied object, such as a red corpuscle, as a standard.

The relation of the structure to the cutting and manipulating of the tissue may be beautifully shown with the lantern. The cracking and splitting in grinding showing the way the tissue cleaves under cutting instruments. In places where the rods are straight, as on the labial surface of incisors, the tissues will split easily in the direction of the rods; but where the rods are gnarled and twisted about each other it will not split if supported upon sound dentine. The slides show these two conditions, which account for much of the difference of feeling of different specimens of enamel to cutting instruments. The gnarled enamel will not cleave when resting upon sound dentine, but if the dentine is removed from under it, it will break through in an irregular manner.

In the outer part of their length the rods are usually straight and parallel, and the tissue will often cleave to that depth, the rods breaking off where they twist around each other, leaving the inner half of the enamel, which is very hard to cut. This gnarled inner portion is more easily removed by getting a small bur into the dentine and undermining it, tearing up the tissue from within outward; the structural elements being more easily separated in that way.

In cleaving the enamel, the instrument does not enter the tissue, separating rod from rod and following their direction, but the sharp edge engages with the surface, penetrating slightly, and then the force applied at an acute angle to the direction of the rods, assisted by the bevel of the instrument acting as a wedge, breaks the tissue in the lines of least resistance. If the instrument is sharp it penetrates slightly, scratching the surface, but if it is dull the edge rests across the ends of many rods and force applied to it may crumble the ends of the rods, but will not split the tissue through to the dentine.

STRUCTURAL REQUIREMENTS OF STRENGTH OF ENAMEL WALLS AND MARGINS.

From the characteristics of the tissue we find certain structural or histologic requirements for strength of enamel walls and margins:

1. The enamel must be supported upon sound dentine.
2. All enamel rods forming the wall must have their inner ends resting on sound dentine.
3. The rods forming the cavo-surface angle must be supported by short rods, whose inner ends rest upon sound dentine and whose outer ends abut on the cavity wall, where they will be covered in by the filling material, these acting as a buttress to the rods forming the margin.
4. The cavo-surface angle must be so trimmed or beveled as to protect the ends of the rods forming the margin from fracture in condensing against them.

The first step in the preparation of an enamel wall is to determine the direction of the enamel rods and at the same time obtain the outline form by cleaving the tissue with a hand instrument (Fig. 1). The inclination of the enamel wall must then be extended so as to leave the rods forming the cavo-surface angle supported by short rods covered in by filling material (Fig. 2). Where this can be done a strong wall is produced; where this cannot be done the rods forming the margin must be supported by a few protected rods, by beveling the cavo-surface angle. (Fig. 3.)

We may show with the lantern the preparation and trimmings of such enamel walls first in straight and then in curly enamel (Fig. 4).

DIRECTION OF ENAMEL RODS IN THE STRUCTURE OF THE ENAMEL CAP.

In describing the direction of enamel rods I have used three planes as standards to which to refer all angles and have used the centigrade division of the circle because our students are familiar with it from their study of instrumentation.

The planes are, a mesio-disto and a bucco-linguo-axial plane and a horizontal plane. The first two are defined as passing through the crown in the axis of the tooth from mesial to distal or from buccal to lingual, the third as at right angles to the other two. In describing angles enamel rods are always considered as extending from the dentine to the surface and the angle with the standard plane being formed at the dento-enamel junction.

From a study of longitudinal sections of the teeth it is found that in the enamel cap the rods are so arranged as to give the greatest strength to the completed structure, and this arrangement may be likened to an arch, the point of the cusp, cutting edge or marginal ridge being the crest of the arch.

Beginning at the gingival line the rods are inclined six to eight centigrades apically from the horizontal plane. Passing occlusally they reach the horizontal plane at about the junction of the middle and gingival thirds of the crown, or in the gingival half of the middle third. Passing occlusally from here they become more and more inclined toward the occlusal until in the occlusal third they may reach an angle of eighteen to twenty centigrades occlusally from the horizontal plane. Over some portions of the crest of the cusp, incisal edge, or marginal ridge they reach the axial plane, but in these positions they are often very much twisted about each other, forming the strongest possible keystone in the perfect structure. Passing down the central incline of the cusp the rods become again inclined away from the axial plane toward the central pit or groove. This plan of arrangement can be shown in the drawing which has been made from a photograph, but in the photograph the magnification is not great enough to show the rods well. In a mesio-distal section of a bicuspid the rod directions are also shown in the same way and in this section the tissue has cracked in grinding so that the checks show the rod directions.

This arrangement of the enamel rods should be studied in detail for each of the classes of teeth, as the enamel rod directions in different positions should determine the angle of enamel walls in those positions. As a general statement it may be said that a strong enamel wall is easily obtained where the rods are inclined toward the cavity, while if they are inclined away from the cavity it is often very difficult to make a sufficiently strong wall. This will be shown in the latter part of the paper.

PREPARATION OF ENAMEL WALLS.

We can take only a few typical positions and will begin with an occlusal fissure in a superior bicuspid. This bucco-lingual section (Fig. 5) shows the entire crown and the position of the groove in which caries so often occurs, usually starting at the pits. Showing just the region of the groove we see the direction of the enamel rods and character of the structure (Fig. 6). A small burr is started in at the pit and carried so as to remove the dentine from under the enamel and then open the groove from within outward; the chisel is then applied to the surface and the tissue cleaves in the direction of the rods as shown in the figure. The enamel wall must now be planed down with a sharp chisel or enamel hatchet so as to bring the plane of the enamel wall into the axial plane. Notice the structure of the enamel wall. The rod which forms the cavo-surface angle is supported by a "V" shaped piece made up of shorter rods resting on sound dentine and all supporting the rod which forms the margin, thus making the strongest kind of an enamel wall. This condition is typical of occlusal cavities and is easily obtained where the rods are inclined toward the cavity, as they usually are on the occlusal surfaces. The cavo-surface angle does not require a bevel unless it is called for because of the sharpness of the corner, and the danger of injury to it.

We may take one more occlusal cavity, a fissure in a molar where caries has occurred. The undermined enamel is removed with a chisel, noting the rod direction. It is not necessary to cut away the dentine beyond the point where sound tissue is reached and then the enamel wall would be trimmed so as to leave the buccal wall in the axial plane and the lingual wall inclined in this instance about six centigrades lingually from the axial.

Taking the mesial plate of a bicuspid and preparing a simple proximal cavity in it we have the conditions shown where the rods are inclined away from the cavity. The occlusal dentine wall cut in the horizontal plane and at the junction of the occlusal and middle thirds of the crown, the enamel wall must be inclined occlusally at least twelve centigrades from the horizontal plane to reach the enamel rod direction. This angle cannot be extended without making the edge of the filling material too thin and the enamel wall is very weak because it has no support from protected rods. The entire mass of enamel from the occlusal margin over the marginal ridge will break out easily.

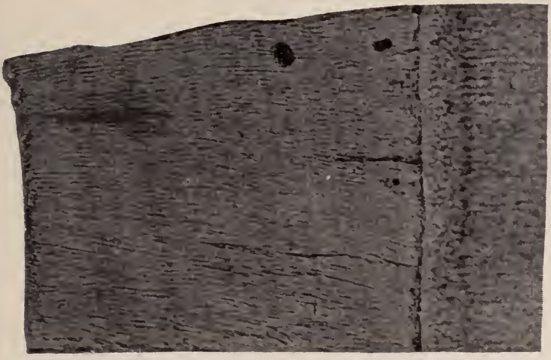
Fig. 7 shows a portion of the buccal plate of a bicuspid which is fairly typical of axial surface enamel in such positions. A portion of the enamel has broken out, showing the way an enamel wall would be cleaved by a chisel. In preparing these walls the tissue must be planed down with a very sharp hand instrument, extending the angle of the enamel wall a little, and then the cavo-surface angle beveled to strengthen the rods forming the margin, as shown.

Fig. 8 shows a buccal cavity in the superior molar, a position in which caries so often occurs. A higher power shows the region of the cavity with the enamel broken out. In the gingival wall the rods have broken across, not following their direction as accurately as usual. The occlusal wall must be extended, inclining it about ten to twelve centigrades occlusally from the horizontal and beveling the cavo-surface angle. The gingival wall inclined about six centigrades apically from the horizontal and beveled.

Finally Fig. 9 shows a lingual pit in a lateral incisor in which caries has progressed, undermining the enamel plates in both directions. This is chopped away till sound dentine is reached, then the occlusal wall inclined ten to twelve centigrades occlusally from the horizontal and the angle beveled. The gingival wall is trimmed into the horizontal plane and beveled slightly. Taking the gingival wall alone the conditions can be better shown.

STRUCTURAL DEFECTS IN RELATION TO THE LINES OF CAVITY MARGINS.

In the development of the enamel cap the tissue is not formed from a single center, but from a number of centers, and the lines at which the formations from the several centers unite produce lines of weakness in the fully formed tissue. These lines produce surface markings upon the crown, the study of which belongs to



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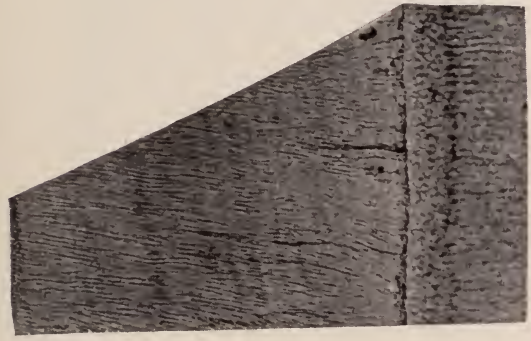

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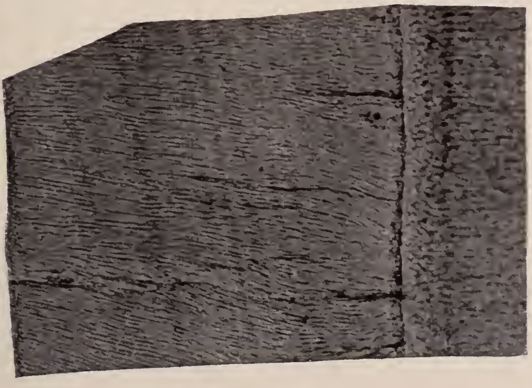

No. 3.

Figures 4 to 10 appear in January DENTAL REVIEW, 1900.

dental anatomy, but dental histology should study the structure of the tissue in these regions in order to appreciate the conditions which exist when a cavity margin is made to approach a groove or fissure which may show no signs of caries. We may show photographs of the crown which show the macroscopic appearance of the enamel defect and the photomicrographs of the sections through the defects, in this way giving some idea of the relation of the two.

Fig. 10 shows a section through a groove. If a cavity wall is left at the position of the line a the rods are inclined away from the cavity, a strong margin cannot be made and a point of liability is left very close to the margin; if, however, the cavity is extended to the line b a strong wall is produced and the point of vulnerability removed.

PYORRHOEA ALVEOLARIS.*

By A. W. Harlan, A. M., M. D., D. D. S., Chicago, Ill.

ITS HISTORY.

Diseases of the gums and peridental membranes have been written upon by many writers, including Fauchard, Desirabode, Toirac, Maury and other French authors and the earlier English, including Waite, Bell, Fox and their successors. In the United States, Fitch, Harris, Bond and a long catalogue of names have followed, down to the latest works of Nash and Talbot.

Many German writers have tried to depict the various affections of the gums. Probably the best works are those of Wedl and Witzel. The later work of Miller, written in German (although the author is a native born American) reflects the tone of the times. This latter work is tinged with the German methods of thought and description.

There is no distinct work from the pen of any author in Scandinavia or Russia not based on the observations of the above authors. All unite in ascribing the loosening of teeth and wasting of the alveoli to either constitutional or local causes. It seems from a study of the work of the earlier writers that the so-called pyorrhoea alveolaris is a filth disease, or one produced by the abuse of remedies or diseases of the gastric mucous membranes or the lower alimentary tract. The examination of ancient crania would appear to show that even in remote times the bony sockets of teeth were destroyed by diseases not due to rapid wedging; the impingement of badly fitting dentures or the misapplication of force in regulating teeth. In looking over the history of maladies of the gums we are not to conclude that they are due to civilization except in a degree, nor to the abuse of mercury or potash or cholagogues *per se*. The human race for ages past suffered from caries and loosening of the teeth, and at the same time rheumatism and gout were not unknown to the ancient writers. It is quite within the range of possibility that uric acid and stored urates might have been found in the tissues of the Rameses and Ptolemys, as well as in those of the ancient kings and nobles of Rome and Greece or other dynasties not necessary to mention.

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*Read before the Alumni Association of Boston and Tuft's Dental College and the Odontological Society of Chicago.

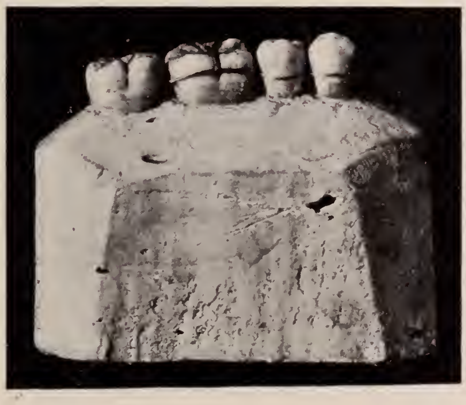

Fig. 1. Tying with silk ligature. (Dr. R. Good.)

THE SUPPOSED ETIOLOGY OF LOOSENING OF THE TEETH.

The most recent authors—those of the past forty years, and their number is legion—do not agree as to the causes of inflammation of the gums and peridental membrane accompanied by wasting of the sockets of teeth. In a paper read by the writer before the Odontological Society of New York, in January, 1900, and published in the *Dental Cosmos* for May, 1900, was given a full review of the work of Nash, Talbot, Barrett, Rhein, Bödecker and Eames. That work will not be repeated here to-night. I will instead give you the résumé of the work of a few writers not there mentioned. Abbott (*Dental Pathology and Practice*) believed that primarily it was due to the retention of calcareous materials in the human economy, and not being excreted through other channels was discharged by the saliva and ultimately caused loosening of the teeth, wasting of the alveoli and their ultimate destruction. Wedl (*Pathology of the Teeth*), in writing on diseases of the root membrane, says that pyorrhoea alveolaris may be due to medicinal causes, to mercury, to rheumatic affections, to phosphorus, to a pre-existing inflammation of the pulp and to a putrefactive ferment. The very excellent reading matter to be found on pages 208 to 216 have not been surpassed by any writer since the appearance of Wedl's classic.

The theories of Reese, Sudduth, Peirce, Miller, Fitzgerald, Galippe, Magitot, Witzel, Farrar and Patterson, although they differ in some respects, fail to show the manifold causes of the loosening of teeth. Locality and environments are factors not to be overlooked, and occupation in many cases will be found both predisposing and exciting factors. The views of Geo. W. Cook, as presented to the International Dental Congress (Paris), may have the germ of the great discovery that is to come to us in this twentieth century, for I believe that we are to look for a microörganism that stands in close relation to, if it is not the exciting cause, of loosening of the teeth.

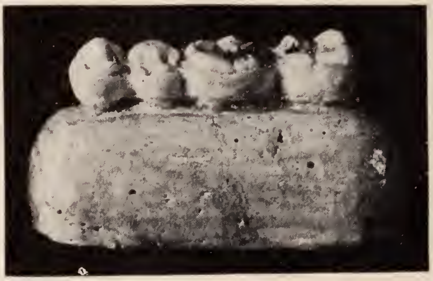

Fig. 2. Kowarska paste, surrounding the teeth. (A. W. Harlan.)

The mere presence of salivary calculus alone does not account for the destruction of the bony sockets or the destruction of the peridental membrane. When we brush aside all the minor local disorders and small medicinal agencies we have still to face the slow melting down of the alveolar processes and the positively discoverable granular, sheetlike and nodular deposits on the roots of the teeth, accompanied by the formation of pus, which does not cease to flow until these deposits are removed surgically. This is a true necrosis of hard and soft tissues.

What are we to argue from this? If mercury, or uric acid, or stored urea or the alcohol habit plays such an important part in the inception and continuance of the loosening of the teeth why will not the disease of the gums be arrested or eliminated by discontinuance of these habits without local treatment? The uric acid theory, it seems to me, while sound as to its general effect on the whole economy, plays but an inferior and inconsequential part in the destruction of the alveoli.

Mouth breathing, as is well known, affects the superior teeth operated upon by the entrance and expulsion of the air through the mouth, and not those of the inferior jaw, or only slightly. The mouth-breather usually has the spreading of the six anterior teeth accompanied by their distortion, and but rarely are the bicuspids or molars affected, unless occasioned by the presence of and activity of a microörganism yet unknown and undiscovered.

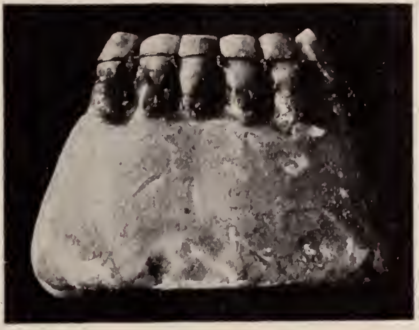

Fig. 3. Wiring teeth with gold wire. (G. W. Pitts.)

Pyorrhoea alveolaris, as we know it in Chicago, New York or Boston, is a disease, principally of local origin, due perhaps in many instances to some of the exciting causes mentioned by numerous writers, but proliferated and extended by the putrefactive ferment of Wedl previously quoted.

The medicinal causes will readily occur to you. They have been dwelt upon by so many writers that I need not particularly at this time enumerate them. The use of the file and disc, the incomplete restoration of the interproximate space, rapid wedging, the extraction of teeth, all have a bearing on the inception of this disease. Badly fitting crowns, bridges and partial dentures irritate the gums and peridental membrane and undue pressure against the alveolar processes will produce absorption in many cases. The long-continued use of medicinal agents, mercury, potassium iodide, and agents causing a profuse flow of saliva are known to be deleterious to the gingival margins of the gums and the subjacent layers of the soft tissues. ALL of the people we meet do not have any of these drugs administered to them, and still many of them have loose teeth. It is said that many cases of loosening of the teeth are due to syphilis, but there are so few syphilitics compared to the total of the population that you will grant at the outset that syphilis cannot be the exciting cause of the numerous cases we see from day to day. I have carefully studied the statistics of gout and rheumatism, and from such studies I conclude that while many persons suffer from acute (transitory) rheumatism and a smaller number from chronic rheumatism and rheumatic gout, and gout alone, still these do not aggregate a sufficient number to account for the large class of sufferers from loosening of the teeth. I am forced to the conclusion that the disease known as Riggs' disease, pyorrhoea alveolaris, symptomatic alveolar arthritis, chronic alveolitis, alveolar ulceration, phagedenic pericementitis, loculosis alveolaris, interstitial gingivitis and ptyalogenic calcic pericementitis, amentitis and various other appellations given us by many writers, is in its inception a disease of local origin extended by lack of care and cleanliness, furthered in its progress by any of the exciting causes previously spoken of in this paper, proliferated by a special ferment in a soil suitable for growth and activity, and that any constitutional disorder which the subject may have concomitantly will accelerate the loosening of the teeth

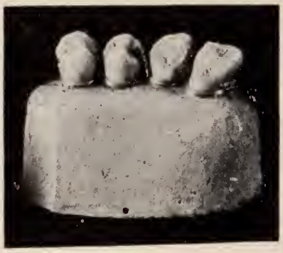

Fig. 4. Wiring teeth with silver-gold wire. (A. W. Harlan.)

and the wasting of the sockets. This will include faulty nutrition, anemia, the poisoning of the alveolar process by the excrement of the organism and the hereditary tendency to disease.

I have never seen a case of loosening of the teeth that did not have its beginning at the gingival margins as a result of infection or traumatism, excepting only the septic poisoning which takes place at the apex of a root due to the death of the pulp and all the attendant consequences therefrom.

CLINICAL FEATURES.

We find the gums reddened, thickened, bleeding, pus oozing from the sockets or pouches, accompanied by a foul odor, deposits on the roots of nearly all colors excepting red and blue (in rare instances we find the root free from deposits, but all the other appearances are present). If in the beginning of the disease the teeth are not loose, a little later they are projected from their sockets, spaces begin to appear, the teeth lean upon each other, the alignment is disturbed, they are distorted in their sockets. We find both salivary and serumal calculus, the former on the crown and the latter on the roots, even in the bifurcations up to and over the apices of the root. This is all so familiar to you that I do not have to dwell upon it further. The pulp being exposed at the apex of the root, the teeth are sensitive to thermal changes. The pulps ache and we have to confront at times a real alveolar ulceration. The alveoli are wasted, melted down and the pericementum disappears. It is true that many cases are seen where some attempts have been made to keep down the most pronounced appearance of a very bad case of tooth loosening, but shutting out from consideration these minor details nearly all of the cases are alike.

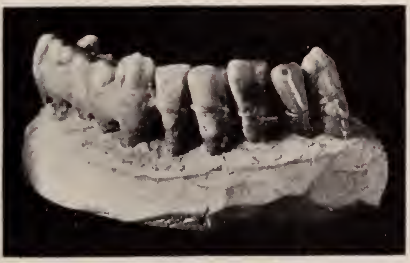

Fig. 5. Kowarska paste and silk thread. (J. E. Hinkins.)

METHODS OF TREATMENT.

Surgery is an exact science. The basis of all treatment is surgical. In all cases where there are no deposits on the roots of teeth the necrotic tissue surrounding a root, whether soft or hard, must be cut or burned to insure a recovery. In all others, and these constitute the greatest number, the use of specially designed scalers and gouges are indicated to remove the accretions from the root. This is no easy task, as the pouches are of irregular form and in many cases extend alongside the roots and diverge from the symmetrical outlines in such a manner as to tax the skill and ingenuity to a degree not contemplated by the authors of text-books. The removal of the serumal or sanguinary deposits from the root of an inferior molar is fraught oftentimes with such difficulty that many expert operators fail to make it surgically clean, from lack of perception of the irregularity of the pocket or pockets which extend from the gingival margin of the gum to the apex of the root.

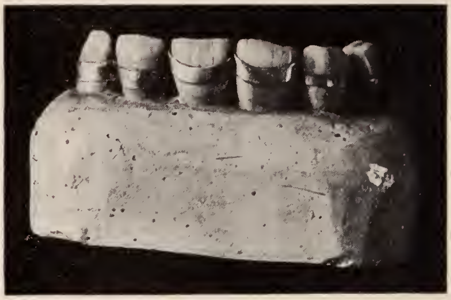

Fig. 6. Banding teeth, silver-gold bands. (A. W. Harlan.)

Do not be discouraged by failure, as usually a few days after the first operation a nearer approach may be made to the remotest portion of the pocket, and success will crown the later effort. It goes without saying that no operation is complete when any, even the smallest portion of a granule is left on the surface of the root. The object of such minute care is twofold—to remove the calculus and break up the nest of microörganisms and their spores, which are always the forerunner of the deposit. Any necrotic tissue, bony or soft, is to be scraped and cut until the sound normal underlying surface is reached. What we seek is to remove every obstruction to healing. These pockets are to be irrigated until all debris is removed, and then, with a suitable syringe, twenty parts of tri-chloracetic acid in eighty parts of distilled water is to be injected to the depth of the pocket slowly, until the whole interior is burned out, cauterized, concreted and coagulated so that nothing will gain entrance to such a pocket for many days. Rest and antiseptic cleanliness of the mouth must follow this heroic treatment.

FIXATION OF TEETH.

There are various methods of holding loose teeth in position—silk, wires, pastes and bands. Silk is only temporary unless it is paraffined, and silver wire is useless, as it corrodes too rapidly. My formula for a silver wire is 67 parts silver and 33 parts gold. This may be used in sheets also. The wire is 27 gauge. The object in using wire or silver-gold bands is twofold—strength and stability in holding the teeth firmly and for the germicidal effect of the silver in proximity to the necks of the teeth. It has been found in experiments made at the Johns Hopkins University and elsewhere that the silver salts and deposits therefrom are inimical to the growth of the pus-producing organisms. If you expect, in the fixation of teeth, to produce a cosmetic effect use gold or platinum bands firmly cemented to the teeth. The Kowarska paste, however, which I have shown on the models passed around is capable of being tinted to any desired shade and it appears to me that it has a large future in the retention of loose teeth. My formula is celluloid 155 grs. and acetone 500 grs. This will make a smooth unctuous paste which will harden on the teeth in about two hours or a little less. I prefer tying the teeth with O or C sewing silk, making several knots in between the teeth as an additional entanglement for the paste. By using an excess it can be trimmed into any desirable shape. I advise leaving

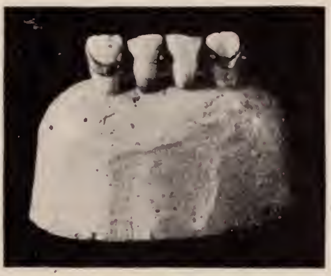

Fig. 7. Open face wad silver-gold metal. (B. D. Wikoff.)

a space adjacent to the gum for the cleaning of the teeth and for use in injecting remedies into the pockets.

[All colors of celluloid may be procured at art stores and the sheets may be filed or ground up and cut with C. P. acetone.]

CONCLUSIONS.

From what you have read in times past and from recent papers published in dental journals we have great hopes of being able to prevent pyorrhoea. The strongest note to sound is prophylaxis. In summing up the results of my observations and what I gather from practice we must conclude that the basis of treatment lies largely in the domain of exact surgery. The fixing of teeth in a position where little or no movement is possible is an absolute necessity. By discarding the use of remedies in pockets where they are not needed is a decided advance. Less frequent medication of pockets is required than was formerly thought advisable. The pockets must be burned out until a new surface is obtained. Washes for the mouth must be of the simplest combination of drugs to be effective, and frequent massage of the gums is always advisable and essential for hardening and condensing them. Local treatment is of more value where any constitutional disorder is brought under control by properly directed hygiene and medicinal treatment on the part of the medical practitioner.

We must recognize that the internal use of drugs alone will not correct the disorders of the gums when the roots of the teeth are covered with foreign deposits and the alveoli are wasted. I plead for absolute thoroughness in the most minute details of pyorrhoea treatment. Without this care and fidelity, success will not crown your efforts, even though the teeth are held firmly in position and drugs are used which otherwise would be of value were these foreign bodies detached and removed.

[Models of various methods of holding teeth firmly in place were passed around. Several illustrations are here given of the manner of holding teeth. I insist on the teeth being ground or filed so that proper occlusion can be had to make the teeth comfortable for use. This is a matter of no small importance.]

PROCEEDINGS OF SOCIETIES.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held in the Masonic Temple, March 18, 1901, with the President, Dr. L. S. Tenney, in the chair.

Dr. Elliott R. Carpenter read a paper on "Extract of Suprarenal Capsule and its Dental Uses."

DISCUSSION.

Dr. George W. Cook: I feel that we ought to talk about this subject, or at least to ask some questions. I was very much pleased with the paper, for the reason that I wanted to hear someone else's experiments or ideas upon the subject. I have used the extract of suprarenal capsule in cases of pyorrhoeal pockets, and I had intended to look up the literature of the subject a little and see if I could learn something about it. I have had personal experience with its effects in acute rhinitis. I know that it is beneficial in that disease. As regards its use in pyorrhoeal pockets, so far as I have been able to observe it has been more in the nature of a hemostatic and gives one a better opportunity to operate than he would otherwise be able to do under the same circumstances. What it is going to do for us in the way of a local remedy we do not as yet definitely know, and we must learn more about it very largely from experiments. The extract of suprarenal capsule is not very well known chemically, and it is only by the application of the remedy to the conditions for which we wish to use it, both experimentally and clinically, that we can determine very much about the results.

I am very glad indeed that Dr. Carpenter has presented this paper, because it undoubtedly will lead to further observation in the matter by a number of men who are interested in new remedies, and I think everyone here, who is not familiar with it, should ask Dr. Carpenter questions.

Dr. G. N. West: I would like to ask the essayist if the extract of suprarenal capsule is anything like the suprarenal fluid or liquid of Parke, Davis and Company? They have something of that character. Dr. Perry and I had an opportunity of witnessing its powerful action as a cardiac stimulant without increasing blood pressure, while we were on a visit in Detroit, in some experiments that were conducted on a dog which had been under the influence of chloretone for five or six hours. The heart's action was as nearly perfect as possible, but alternating every half hour, they made injections of this suprarenal fluid or liquid, whatever they call it, and very quickly the heart's action was materially increased. I think Parke, Davis and Company have literature on the subject which will be of benefit to those who are interested in this preparation, if they will write for it.

Dr. Carpenter: I cannot answer Dr. West's question.

Dr. Nyman: I would like to ask whether any benefit has been derived from the administration of the extract of suprarenal capsule internally for the relief of hay fever?

Dr. Carpenter: I have received reprints of a couple of articles that were printed in the *New York Medical News,* written by the Chemical Department of Armour and Company. These reprints furnish excellent ideas as to the use of the extract of suprarenal capsule. I believe in a great many cases they have claimed permanent cures from hay fever by the use of the extract of suprarenal capsule.

Dr. Selden H. Ford: While we are on the subject of hay fever, I wish to say that last summer I had occasion to use the Parke, Davis and Company solution in a case of hay fever, it being recommended for my wife, who had at the time asthma and paroxysms of sneezing, etc. Last summer she had the worst attack she has ever had, and a physician recommended that this solution be used as a spray. It was used in accordance with the directions and it aggravated the trouble. This physician told me that he had used it with great benefit in a number of cases, and in some the paroxysms were stopped entirely. It is worthy of trial. We must remember that what will work with one will not work with others, but in my wife's case it proved anything but beneficial. It is said, that in 75 per cent. of the cases of hay fever the extract of suprarenal capsule is of great value.

Dr. J. E. Nyman: I have known of several cases in which the fluid preparation of the extract of suprarenal capsule was used for spraying the nose to relieve cases of rhinitis and pharyngitis, and it only aggravated the cases and made the trouble more acute. The physicians, who applied it, found later that they had been using old solutions that had deteriorated, and instead of being beneficial, the applications were inimical and aggravated the trouble. They emphasize the importance of using absolutely fresh solutions. One of the physicians has a fresh solution made twice a day in order to be absolutely certain of its use, and since then he has not had unpleasant experiences. In the case of the doctor's wife, I have no doubt that the aggravation of the trouble was largely due to the use of an old solution that had deteriorated.

DR. FORD: I was told that it was a fresh solution, but I could not induce her to try it again.

DR. GEORGE B. PERRY: We are indebted to Dr. Carpenter for the research he has given us in this paper. He has opened to many of us a comparatively new field in dental materia medica. My experience with the extract of suprarenal capsule has been limited. I have only used the product from one house, that of Armour and Company, and the literature which has given me an insight to the extract has come from them, with the exception of that I obtained from Parke, Davis and Company, which Dr. West referred to. We saw some experiments conducted on a dog under the influence of chloretone, and the suprarenal extract brought about a marked increase in the heart's action when it was injected. I have not used it in combination with cocaine, as mentioned by Dr. Carpenter, but I have used it in pyorrhoeal pockets and have found that it not only prevents hemorrhage, but it also anesthetizes partially the surrounding parts, enabling one to go deeper into the tissues. The liquid which is furnished by Parke, Davis and Company is made from the suprarenal extract. I agree with Dr. Carpenter and others that it is always wise to have a fresh solution if we attempt to liquefy the extract, and it is much wiser and safer in every instance to *use* a *fresh* solution, because where we make the solution, as we are apt to do, with cocaine, and leave it in the cabinet for a long time, it deteriorates. The suprarenal extract is used as a spray and also for insufflation. The finely ground powder may be insufflated in the nose in a case of rhinitis, or sprayed in the form of a liquid. So far the reports given by both methods are that it is very beneficial.

DR. A. W. HARLAN: One of the things in connection with the extract of suprarenal capsule is that within the past three months it has been discovered that it will not deteriorate if a one per cent. solution of resorcin has been added to it. You will find this in the *Medical Record* for March 16th. In quite a number of cases, where the suprarenal extract has been given, the trouble has been its deterioration. If it is used in a pyorrhoeal pocket or anywhere else for the arrest of hemorrhage, by making this addition it will be found a very useful drug. We can hardly call it a drug, because it is not that, but it is one of the most useful substances for the arrest of hemorrhage, both internally and externally, that we have had for the past two years. The other most useful drug for external application has been ferropyrine, which is easily obtained now.

Dr. Carpenter (closing the discussion): I am very much pleased that my paper has elicited some discussion and has opened up a new line of thought. Nothing was said in the discussion to which I can take any exception, therefore I have nothing further to say.

Dr. J. E. Nyman read a paper on "Emergency Crowns."

DISCUSSION.

Dr. W. H. Taggart: I did not expect to be called upon to open the discussion on Dr. Nyman's paper, but I wish to say that if I were asked what kind of crown I would put on in an emergency case, I should say just a simple facing with a pin riveted upon the back, set with gutta-percha. I would never allow a patient to go out of the office without putting on some kind of a temporary crown. If a patient comes to me with a natural crown broken off, and wishes an artificial one put on, and wants to know how long she will have to do without it, I tell her that it will only take fifteen or twenty minutes if she will give me a convenient time to put it on for her. Patients should be assured that they will not have to leave the office without having a temporary crown put on. When they are so impressed they will give plenty of time for us to put on the artistic finishes to the permanent one, to which Dr. Nyman has referred. I use a crown which is similar in construction to the one spoken of by Dr. Nyman, and which I described at the Alumni clinic several years ago, but instead of using amalgam I use gutta-percha. I have some specimens which I will pass around.

I have always contended that a chalk-talk was one of the most instructive ways of conveying ideas to others. It is what makes illustrated papers so popular and interesting. Nearly all of us see through the same kind of eyes, but we do not understand certain points clearly when expressed in so many words. We can frequently see and understand with our eyes what we cannot grasp by the speakers' use of the English language, because many of us have such a poor command of it. Inasmuch as we have no blackboard, which I regret very much, I must do the best I can in telling you how I make temporary crowns.

I usually use square wire. It is laid on an anvil and flattened on one side, or, as the mechanics would say, an offset is made on one side. This offset allows a place for the pins to bend into. There are two holes made in here for the pins (indicating) with a plate punch or file, and this part is allowed to slip in between the pins to hold the parts together. If this specimen is passed around you will probably grasp the idea I am trying to convey to you. After these pins are bent down, a drop of soft solder at this point (indicating), held over the flame, will hold it in place. Sometimes I make forty or fifty of these teeth, during some leisure hour, and then lay them aside. I have them of varying length and width. If one is too long, I can cut it off; if it is too wide, I can narrow it. By making them of good size, you have much more leeway for making a proper size. I take the crown, hold it with my fingers over the flame and mould a wad of warm gutta-percha around the pin and lingual side of the facing and force it to place on the root while the root is wet, then line it up and take it off the root, then form it in the shape of a tooth without interfering with the impression, which goes against the end of the root. I dry the root, warm the gutta-percha slightly, dipping into oil of cajuput, and then shove it into place. A crown like that will stay for six months.

The other crown, made with amalgam, Dr. Nyman spoke of, would be more permanent if a patient was going to be away from you any considerable time. The first few batches of alloy sent out by Dr. Crouse were excellent for this purpose. It was a quick setting alloy. I took the same pin and facing I have referred to and worked over the end of it, in a rough way, some very plastic amalgam and pushed that up to its seat onto the root, held it there for a few moments, and it would set so rapidly that it could be pulled away, and then I would trim to form. Inside of fifteen minutes the crown could be put on.

Here is a crown (exhibiting) made after the same plan, finished up, with a little artistic work put on it, which to my notion is far ahead of a Logan crown for usefulness and adaptation to the end of the root.

I can think of nothing further to say at this time, except to emphasize the importance of never letting patients go out of the office with a front tooth off.

Dr. J. N. Crouse: This paper carries me back thirty years, when I was practicing dentistry in the country, before Richmond crowns were known. In those days we made crowns with wooden pins, setting with gutta-percha, and I have known them to last twenty-five years. The only trouble with putting on such crowns temporarily is, that patients often wear them for a year or two and then refuse to accept a more expensive substitute.

Dr. A. W. Harlan: I have put on a good many emergency crowns at different times. There are many ways of making emergency crowns, and one of them is to put them in with an ordinary wooden pivot. I began the study of dentistry in 1867, at which time they did not have any band crowns at all. I have put in a good many pivots with wooden pins, and later pivot teeth with metal pins. It is an easy way to put in an emergency crown. You can take the ordinary rubber tooth with metal pins, solder it in three or four minutes, and set it with a little cement or gutta-percha, so that it will last for a few days, or a month, and I expect that is what Dr. Nyman is talking about. You may take an ordinary piece of platinum, four-sided, file it down to a point, and solder it to the ordinary rubber tooth with soft solder, cement it in the root. This will make an emergency crown which will prove satisfactory for the purpose intended. I have seen many of them stay for months and years, and that is what an emergency crown is intended for—simply to replace something that has been broken for the time being.

Dr. J. G. Reid: I believe Dr. Matteson presented a crown a few years ago at a meeting of the Illinois State Dental Society, which was quite similar to the one that has been described. I have used those crowns a few times for temporary purposes with good results. He uses a rubber tooth with heads on the pins; he takes stiff copper wire, makes a loop around the pins, then twists the pins and adds some soft solder to them and puts them into the root of the tooth with gutta-percha, and the crown is ready to be inserted into the root. This can be done in five or six minutes if one has the tooth in his possession ready to be inserted. It is the quickest way of making an emergency crown that I know of.

Dr. George B. Perry: I have in a number of instances, where I have been called upon to make emergency crowns, made them similar to those that have been described, but selecting a rubber tooth, taking a piece of German silver wire, No. 16 gauge, flattening one end of it, cutting a notch on either side, bending the pins over toward each other, filling in the space with easy flowing silver solder, then contouring the tooth with anything you choose to set it with—cement, amalgam or gutta-percha. The silver solder makes the pin more rigid than the ordinary soft solder as used by the tinsmith or electrician, and by squaring the end of the pin and allowing it to rest against the shoulder of porcelain it is not so apt to move after the desired angle is obtained.

DR. F. E. ROACH: I never allow a patient to leave my office without a temporary crown in the place of the one that has been cut off. For emergency crowns I keep a stock of some fifty or sixty of the cheaper, ready-made porcelain crowns. From this number I can select one to serve very well as a temporary substitute until the permanent crown is made. They can be quickly set with gutta-percha and are easily removed when desired. And I find most patients appreciate the service.

DR. HART J. GOSLEE: There is another great advantage in mounting a temporary crown aside from the disfigurement of the patient, which has not so far been even mentioned and is very important, that is, that the gum tissue immediately surrounding the exposed end of the root is kept away nicely, which greatly facilitates the mounting of the permanent crown.

The operator who dismisses a patient now without resorting to some temporary method of replacing the lost crown does an injustice to both the patient and himself.

My method of making a temporary crown is a quick one, and I always have a selection of facings on hand, which all of us should invariably have: I first take a piece of German silver wire, fit it to the canal, select and grind the facing, and then attach it to the wire by clinching the pins; then remove it and place upon a charcoal or asbestos block, touch the parts with soft solder flux, chip or cut off a small piece of fusible alloy, place it in position, and turn the flame of the Bunsen burner upon it. The soldering is done in a few seconds then without danger, and the construction is complete. It is then mounted with gutta-percha or temporary stopping, and may be worn for some time. Such a crown can easily be constructed and applied in ten minutes.

DR. NYMAN (closing the discussion): I have been very much interested in the discussion on my paper. In reference to the remarks of Dr. Harlan and Dr. Crouse, what is the use of harking back to discarded practices of former years and advocating the use of a crown that nearly every dentist has forgotten how to manipulate, and which is not to be found on the market? Cases have been known where wooden posts placed in roots have swollen from moisture and caused fracture of the roots. I am opposed to methods involving soldering of any description as it is unnecessary and consumes more time and there is danger of cracking the facing every time heat is applied.

The method mentioned, not only provides for contouring, but it holds the facing in its proper relation with the post firmly on the root. I do not like to unite the pins of a facing to a post, because it entails more fitting to keep the post up in the canal in the proper place, and have the facing in proper alignment with the arch.

A regular meeting was held April 15, 1901, with the President, Dr. L. S. Tenney, in the Chair.

DR. J. N. MACDOWELL read a paper on the "Evil Results of Injudicious Extraction." See page 521.

DISCUSSION.

The discussion was opened by DR. TRUMAN W. BROPHY. Dr. Brophy said: I hardly know why the President has called upon me to open this discussion when Dr. Case and some of the other members, engaged in this special work, are more competent to do so. I am very glad indeed to have had the privilege of listening to the paper. Papers of this kind are valuable always for the society. The essayist has presented some new thoughts. Among them he has tried to define dentistry. I am not able to quote the definition that he gives, but I would add to his definition this: It includes also the promotion of health and increases the longevity of mankind. Any one who attempts to define dentistry has a great problem before him. I do not know of any one who has defined dentistry as it should be. If you will ask a dentist of large experience and of many years' practice and careful study, what constitutes dentistry, I think you will puzzle him. Dentistry means so much. Some one says it is a specialty of medicine. Yes, in part it is, but that part constitutes less than one-third of dentistry. What is the rest? Everything that goes to make up the arts and sciences—almost everything. We draw from the arts; we draw from the sciences; we make use of all that is made use of in medicine, and so it is a hard matter to define dentistry. I asked a distinguished teacher in medicine the other day, What is medicine? While he is a skillful man and an author of books, one who has been engaged in the practice of medicine for thirty-five years, he stated, "Certainly it is not chemistry; nor is it histology; nor is it biology; nor is it anatomy, strictly speaking, or physiology." These are not medicine. Each is a science in itself and the aggregate of these sciences is the basis upon which medicine is built. Some one may say that while this may not have a direct bearing on the subject, it leads up to it. These sciences are essential to medicine, consequently they are a part of medicine. So a knowledge of the language in the study of medicine is necessary, as much so as it is necessary to have a knowledge of mathematics in order that calculations may be made and prescriptions written properly. It is education, the basis that we get, and then upon that we build. So in dentistry we must have the essentials, the foundation principles, which must be acquired and upon those we erect the superstructure. There is a great deal in dentistry, and I am eager to see the man, or to read a definition from a man, who is able to define modern dentistry according to our teachings in the most advanced institutions of dental learning. Such a definition has not yet been formulated to cover the entire field.

I approve of almost everything that Dr. MacDowell has presented, except possibly some phases of extraction, and it would be a rare case indeed, in my opinion, which would call for the extraction of the cuspid teeth. The loss of the cuspid teeth means a change in the features that we cannot by any possible means at our command overcome. The facial expression is changed forever after the loss of the cuspid teeth. The prominence of the cuspid tooth gives to the face normal contour. Let a cuspid be removed from one side and the other retained, and we will have a depression that is visible at a reasonable distance. In this connection I wish to say that a number of years ago a good old friend, Dr. Haskell, used to say that if all the teeth are gone but the cuspids, take the cuspids out. I take an opposite view, and I have pointed out the advantages of retaining these teeth on several occasions. The Doctor held that they weakened the denture, or in attempting to fit a plate around them the plate would be weakened at the point left for the cuspid. Quadruple the plate then and make it strong enough and save the facial expression. Dr. Haskell has done much in trying to restore facial expression by lifting up the cheeks at the wings of the nose to give contour by extending the plates up as high as possible, but he has not succeeded in doing it. It leads to depression at that point, and leaves deep grooves at the nose as a result of the loss of the cuspid tooth. In this respect we have such a tooth here (indicating), showing malposition from premature removal of the temporary cuspid, and the tooth directed at an angle of 45 degrees. Such a tooth might be put in position by having the bicuspid removed and the cuspid brought back into place and occupied by the bicuspid. There are cases where it may not be possible to do this. For instance, young men who are living in rural districts or towns, who are inaccessible, it would be impossible to reach them without great expenditure of time, and they would be unable to spend the time necessary to have this work done. It is surprising to see how much nature will do in such cases unaided. A tooth in such a position as this (indicating), with room for it down below, in the course of time will almost come into place without any artificial assistance. A little pressure on the part of the finger of the patient from time to time will enable the tooth to come into position, provided there is room in the arch for it. I have seen marked changes in the pose of the teeth in cleft palate patients who really had no upper lips in cases where I found it necessary to produce a lip from flaps of the cheeks, etc. Tension would be so great owing to the fact that there was not enough tissue to make a flexible lip to move the teeth far out of the position they should occupy. This is evidence sufficient to me that the tension of the orbicularis oris muscle has much to do in changing the position of the teeth, particularly the superior teeth.

I would suggest to the gentlemen who are engaged in orthodontia the value of the X-ray in making diagnoses. I presume every one who has dealt with the irregularities of the teeth, and the question of just what to do in certain conditions prior to the eruption of certain teeth, has thought of the value of the X-ray in locating them, not only in determining whether they were present within the substance of the bone, but determining their location and pose. I cannot say too much in praise of the remarkable work that was done in the City of Toronto in February of this year by Dr. Price, of Cleveland, Ohio, in the giving of an exhibition by means of the lantern, showing his work with the Roentgen rays. While this may seem a digression to you from the topic of the evening, I would call your attention to the great value of making diagnoses by the aid of the X-ray. Dr. Price exhibited specimens showing teeth that were malposed in persons far advanced in years; teeth that had never erupted, and had never caused the slightest inconvenience; never had produced absorption of the roots of the adjacent teeth, nor had they been the nucleus of a cyst, nor in the slightest degree caused any disturbance. In other cases the teeth had been the promoters of extreme neuralgic pains, which were located. In one instance a tooth was posed back in the ramus of the lower jaw with its masticating surface directed upward and inward, so that it came in contact with the inferior dental nerve as it entered the inferior dental canal, and the patient had been treated for years, and a number of operations were made for the cure of neuralgia, the surgeon not being able to locate the cause of the disturbance. The X-ray revealed it instantly, and after the malposed tooth was removed the patient, for the first time in several years, was relieved of pain, showing the value of this method as a diagnostic aid in orthodontia. By means of the X-ray Dr. Price was able to show us pulp nodules, cement, broken broaches in the roots of teeth, etc.

In regard to the mouths that Dr. MacDowell has shown on the screen to-night, I am sure it is sometimes advisable to remove the permanent teeth under certain conditions. After very careful consideration and consultation with some of my friends, a number of years ago, I removed four bicuspids for one of my own children. The object I had in mind was to preserve the other teeth and to prevent them from breaking down. I can assure you that I have never had occasion to regret doing it. It made the work of preserving the other teeth much easier.

Dr. C. S. Case: When I read the card, announcing the subject for this evening, I made up my mind that I would present and assist in the discussion of a subject which I consider very important. It is important not only to men who make a specialty of regulating teeth, but it is important to dentists in general, who essay to extract teeth for somebody else to regulate. I have found in my practice that nature is always a kind mother; that she will do a great deal more many times than we imagine. In very many instances where chaos and irregularity seem imminent to those who have not made a study of her ways, harmony, regularity and perfection of position will result if she is only allowed to have her way, if she is not interfered with by some of us wiseacres in our endeavor to assert the powers of the *genus homo* in what we are pleased to term professional ability and professional skill.

The subject of injudicious extraction of teeth, as I take it, from the announcement, means the injudicious extraction of the permanent teeth. That in itself is a great subject. The essayist has included the premature and delayed extraction of the temporary teeth. Gentlemen, I could talk to you for fourteen hours on those three phases of the subject. There are a great many things I would like to say to you in regard to the injudicious extraction of the permanent teeth. The subject itself might be divided into two classes. First, that which has relation to accidental or inadvertent extraction of the teeth; I cannot say careless extraction of the teeth, because we all care to make no mistakes. Second, the lack of judgment or ability, which we properly term injudicious extraction of the teeth. I can remember a very painful circumstance in my own experience, where I had extracted the bicuspids in a case when it was not called for. I had had one patient from the family with a decided protrusion of the upper teeth and had corrected the deformity partially without extracting, because there were wide spaces between the front teeth, due to thumb-sucking and malocclusion. I was never satisfied with the case. The people were opposed to extraction of the bicuspids. Then the young sister came—a girl about 9 years old—with the lateral incisors appearing to be just erupting through the gums and with position of centrals and jaw, showing a decided upper protrusion. It had been my practice for years to extract the bicuspids early in those cases where there was destined to be a protrusion of the uppers. So I extracted the bicuspids, sent the case away, with directions to use slight force on the front teeth. The object of the extraction of the bicuspids under these circumstances is to deflect the oncoming cuspids into the alveoli of the extracted bicuspids. I believe we get far better results by that method. A year or two after that I saw the case and what I had supposed were lateral incisors were not lateral incisors at all, they were cuspids. I sent the patient immediately to Mr. Fuchs, who had just started his X-ray laboratory, to see if there were lateral incisors in that case. We found none. I had been led to the unfortunate extraction of these teeth through nature's mistake rather than an error in practice. Perhaps I should have let them alone a little while longer. It has been a good lesson to me.

I can cite another instance which may serve as a warning in marking an extracting specialist's cards. I intended to mark a central incisor to be extracted, but the patient came back with the lateral incisor gone. I am speaking now of the lower jaw. I do not believe in extracting the upper incisors. I immediately started for the dentist who had extracted the tooth to give him a blowing up, but he showed me I had marked the wrong tooth. This particular case did not amount to very much. It would have been a little better if I had had the central incisor extracted instead of the lateral, because the adjoining roots of the teeth were far apart in one instance and nearer together in the other. Apropos to that, I have in one instance marked the lower bicuspids for extraction on the card of a specialist, expecting the young lady to go to the specialist to have these bicuspids extracted. She said if I did not object she would like to have her dentist extract her teeth. I told her that I had no objection. A little while after she came back with the *upper* bicuspids extracted, not the lower ones. Well, there was some excuse for the dentist making a mistake in that case, for the patient really had a protrusion of the upper teeth. It was a case of full protrusion of the upper and lower teeth, but at the time I did not expect to have any of the upper teeth extracted; and later only one bicuspid extracted, as she had already lost a first molar. This left her on that side only a bicuspid and molar as she had had the third molar tooth extracted. This dentist failed to turn the card around and read it right side up. There are a great many instances of injudicious extraction of teeth, and in thinking the matter over, knowing that I was coming here this evening, I selected a few models illustrating some of these cases.

So far as the paper is concerned, we cannot help but compliment it and the author. It was very fine indeed, but it seemed to me it was lacking in certain important features. I do not know that I have a right to expect others to think as I do. I have been dwelling so much upon the effect of the teeth upon the features of the face, that I may be considered a sort of hobbyist in regard to depending upon that for a guide. It seems to me when we talk about the relations of the teeth and the arches to each other alone, we have not touched the real subject. If it was understood perfectly, that no matter how irregular the teeth are; no matter how they stand in the arch; no matter what the relation the dental arch has to the alveolar arch in size, all can be corrected. If the apical zone is too small, is not fully developed, has not grown sufficiently for the dental arch, the whole arch can be corrected. If the cuspid teeth are out of position entirely, so that the lateral incisors and first bicuspids touch each other, that is no reason why the cuspids should be extracted. It is no reason why any tooth should be extracted? Why? Because the arch can be perfectly corrected. It is not a question of whether the teeth are very irregular or not, but the question is: what will the influence of the teeth exert upon the features of the face? If we extract a tooth from that arch (referring to a model), what will be the present effect of the teeth upon the features of the face, and what will be the harmonizing influences of growth? All these things must be considered. Note the position of the teeth in their relation to the unchangeable parts of the features. See if you are destined to have a protrusion by forcing these teeth to alignment. After they are brought into alignment, it is not imperative that they should not protrude slightly. Remember the teeth are full-sized while the bones in which those teeth are set and the surroundings of the bones of the face are small, child-like, and undergrown. Either let them alone, or—certainly do not extract unless you are sure of the destined condition of facial contours. That should be your guide always. The idea of extracting a cuspid tooth because it happens to be out of the arch, or to extract bicuspids because the cuspids themselves are completely out of the arch, is no excuse whatever. The great thing is to study the harmonizing influences of growth. That is a difficult subject, namely, to tell what will be the influence of growth upon the rest of the features, whether they will grow to harmonize with the arch if the teeth are saved and put into alignment. The most common form of irregularity is when the cuspids have not room to erupt. Why? Because the deciduous cuspids are so frequently extracted to permit the lateral or the first bicuspid to erupt. They have been prematurely extracted, with the result that the adjoining teeth drift into the space, together with lack of growth, so that if we bring the cuspid down in front of the bicuspids that may have drifted forward, we are placing the cuspid too far forward. Some means must be devised by which those teeth can be pushed back. Dentists have been, for years, expanding the arches laterally. Now, if we could follow the idea that those teeth, having drifted forward, must be pushed back in order to allow the cuspid, when it is properly erupted, to take its proper position, that is exactly what we want to do. There are some dentists who are extracting the second deciduous molar right along, and this is really one of the most important teeth in the child's mouth. See what nature has done to solidify its position by spreading out its roots. And for the direct purpose of preventing the oncoming permanent molars from crowding it forward into the unavoidable spaces caused by the changing of the temporary and permanent teeth. Any one who has regulated teeth knows what stability the temporary molar has. Why is it so fixed? Why is it so permanent? You know how the first permanent molar will drift forward rapidly if this tooth (indicating) is removed, because here comes a tooth behind it—the second molar—forcing it forward so that the bicuspids, and finally the cuspid in front of them, have taken a much more forward position than they would if that tooth had been allowed to remain. So the extraction of the temporary cuspids and temporary second molars is a thing to be avoided.

In regard to irregularities of the teeth, I brought with me one or two models for demonstration. I have in my hand one in which the cuspid is completely thrown out of the arch; the lateral incisor and the bicuspid touch each other. You see in the final model the complete correction of that. This case was sent to me by a dentist who advised extraction of the cuspid, or first bicuspid. That would have been proper if I had not believed that the harmonizing influences of growth would bring the case to a more perfect condition with all the teeth in alignment. There was no excuse for extracting.

Here is the model of a case which was sent to me by a specialist in extracting. The dentist had advised the extraction of the lateral incisor simply to correct an irregularity; and we have dentists who are advising the extraction of nearly all the teeth, so far as that is concerned, but more particularly the bicuspids, where they should not be extracted. The lateral incisors come, perhaps, next; the cuspids next, and very recently in college practice a young boy came to me whose central incisors had been extracted to correct an irregularity. What do you think of that—central incisors! The lateral incisors had drifted toward each other, so that they stood at a decided mesial inclination, and I called up the mother of the boy and asked her how the boy lost his teeth. She replied that she had them extracted. I asked her the reason why she had it done, and she said that they came away in front of the other teeth, and presented such an unsightly appearance that she had a dentist in South Chicago extract them. I said to her, "Madame, do you know that you have a good case for a malpractice suit?" She said it was not the fault of the dentist, as she had insisted on the extraction. But it was, nevertheless.

Not a great while ago a lady came to my office with a beautiful daughter. As soon as I saw the daughter I noticed a peculiar expression of one side of her face. There was a lack of character or expression. If I were to tell you the deformity that had been produced in that case by the simple extraction of a right upper cuspid tooth, you would hardly believe it. The occlusion of the bicuspids had prevented them from drifting forward and partially filling the space, with the result that the action of the orbicularis oris muscles had thrown the front teeth to that side, so that the central incisor on the opposite side was decidedly inclined mesially, the larger portion of its cutting edge being on the wrong side of the mouth, and the teeth in drifting over (indicating) following the lines of circumference of the circle that would be described by the cutting edges of the teeth with the apex at the center of the circle, lifting them so that incisors on the right side were out of sight part of the time. The muscles of the mouth had changed in their harmonious action. The patient, in laughing or talking, would lift the lip on that side. Altogether, with the decided depression on that side, owing to extraction of the cuspid, it was a most unhappy result.

I have here a model or case showing that extraction of the first bicuspids had produced decided deformity of the face. These teeth were extracted by one of the best dentists in Chicago, a man whom I respect very much for his dental ability. He came to me and said, "Doctor, what do you do when the cuspids erupt outside the arch and there is no room for them to come into place? You have to extract the bicuspids, don't you?" I replied, not by any means. I first see whether they *should* be extracted or not. I try to determine if they should be extracted by the features of the face. If the case is destined to be one in which the teeth protrude, then I would not hesitate to extract. If it was simply thrown out of position, as children's teeth are often, by the premature extraction of the deciduous teeth, I regulate such teeth. I make a space for their proper eruption. The dentist then said, "Well, I suppose I have made a mistake." He then told me he had had a case of that kind, in which he extracted the first bicuspids to regulate the teeth and that now the little girl had jumped the bite. She is closing her lower teeth in front of her uppers in other words. There you are! The natural growth of the jaws carried forward the lower teeth, while lack of proper pressure and sustaining force of the upper dental arch prevented the growth and development of the intermaxillary portion of the bones, that affected not only the position of the teeth, but the entire portion of the bone, upon which the middle features of the face depend for their contour. I show you now the models of that case, also the face of the patient. Here you will see the depression (indicating). It is not so marked in the profile view as when you look at it from the front. You see in the models how it has been necessary to force the anterior teeth forward with a view ultimately of bringing the second bicuspids forward to take the place of the first and inserting artificial bicuspids to keep the arch in position.

I have here a face model of the daughter of one of the most prominent surgeons in this city, who came with orders to extract the upper teeth to correct what seemed to him to be a decided protrusion. The upper teeth were considerably in evidence, and the lower teeth had retruded, the cuspid teeth not erupting. The lower front teeth took a retruded position, allowing the lip to drop in and to rest behind the upper teeth. She is twelve years of age. What will be the result in time? The lower teeth will be forced forward to permit proper eruption of the cuspids, and then natural development with a little proper aid will do the rest.

I have had such cases repeatedly where I have regulated the teeth, and the parents have said to me, "Oh, Doctor, this looks as if the teeth are protruding; if they should remain that way always, I would not like it at all." But knowing the harmonizing influences of growth on the child, the beauty of her face will be far greater to allow the arches to remain and permit nature to harmonize the whole.

I have here the teeth and face models of a patient, and you will be surprised that a dentist should extract, as he has in this case, the first upper bicuspids for correction, simply because the upper arch was decidedly irregular and with the upper front teeth occluding back to the lowers. Dentists make these mistakes. This dentist afterward sent the case to me for correction. It happened at the time I was going away to attend the Omaha meeting, and I was glad of it. I said to the people that it was impossible for me to take the case then, and I would write to the dentist in regard to it. I gave this dentist a blowing up. The case came from Ohio. I told him what I thought of that kind of practice, extracting teeth, and then sending the case to me for correction. I told him I preferred to be my own judge when teeth shall be extracted.

You can see in this case, the models of which I now present (indicating), the influences of extracting lateral incisors to permit the eruption of the cuspids. In a short time the lower teeth occluded in front of the uppers, and it was necessary to correct that and the whole facial expression.

I want you to observe one or two more models. Here is a case where a dentist in this city extracted a lower bicuspid from the mouth of a thin-faced girl with a somewhat retruded lower jaw. It needed all the teeth in the arch. They were decidedly irregular, but it needed them, and they could be placed in their proper position, and thus by restoring the proper size of the arch it would aid in beautifying the features. It became necessary to force the teeth apart and to insert an artificial tooth to correct the contour of the face.

I have here models of another patient in whose case a good dentist ordered the extraction of the two upper bicuspids largely because of the relation of the upper to the lower teeth. In looking at the teeth alone, as you see them, there seems to be an upper protrusion. We have many instances where, in looking at the teeth alone, there seems to be a decided protrusion of the uppers. The relation of the upper and lower teeth to each other is no guide. It might be a lower retrusion. In this case the lower first molar had been extracted, allowing the teeth upon one side to drift back to fill the space. There was also a general retrusion of the incisor teeth, allowing the lip to droop in. In looking at the face, while there seems to be a slight protrusion in the middle of the upper lip, there is no indication of a general protrusion of the upper; also when you examine the teeth themselves, because you will find the central incisors are in advance of the general line of the teeth. What is necessary in the upper is to expand the arch and allow the central incisors alone to drop back into line, which will allow the upper lip to fall back into harmonious relation. The principal work will be on the lowers in this case. The lowers have drifted back, partly due to the extraction of the first permanent molar, and partly due to the general retrusion of the incisor teeth. The case came to me before the teeth were extracted, fortunately, and I saw, with my greater experience in these things, where the difficulty lay. What will we do in this case? We will merely expand the upper arch, to allow the centrals to take their position, then force the lower teeth forward to bring out the lip, put in an artificial tooth to hold the arch, and thus the case will be corrected without any extraction whatever.

Dr. George B. Perry: There was one point not dwelt upon in the paper of Dr. MacDowell, and that was the extraction of deciduous teeth for the purpose of allowing the permanent teeth to erupt. In other words, at what time one could decide when to extract the deciduous teeth when the patients had gone beyond the approximate age, when we look for the eruption of the permanent teeth. I have a case in mind in which I was much interested at the time I saw it and have been since, and I want to get some points which I hoped would be brought out in the paper or discussion. The cases I have in mind are those of two young misses, belonging to the same family, one being twelve years of age, the other fourteen. The temporary molars were extracted for the purpose of giving the permanent teeth opportunity to erupt. In each case I believe something like six teeth were extracted, although I do not remember the exact number, and where I had diagnosed the permanent teeth below the temporary ones, I found it to be a fact by probing with an instrument. The crown of the permanent tooth was felt below the temporary tooth after extraction. Both my diagnosis and prognosis were correct.

I was in hopes that more stress would be laid upon the extraction of the temporary teeth instead of so much time having been devoted to the extraction of the permanent teeth for the correction of irregularities.

DR. MACDOWELL (closing the discussion): I my paper I made the statement that no definite rule or law could be laid down for the extraction of teeth; that I could only offer suggestions for extraction and the possible results liable to follow the extraction of either the temporary or permanent teeth. It is possible to write a lengthy paper on the results of extraction of the temporary teeth, the results of extraction of the permanent teeth, the first permanent molars, or bicuspids, or the results upon the facial appearance of the extraction of any of these teeth exclusively. But I did not confine myself to that particular subject. I based my paper upon the results and questions that are continually arising among the members of the dental profession. The question is often asked whether it is necessary to extract a temporary cuspid that has been retained until maturity, or whether it is advisable to extract a temporary molar, etc. One of the hardest things I found in writing this paper was to make it brief and concise. I think you will all agree with me that it is a difficult thing to shorten a paper and yet cover all the essential points. When the paper is published in THE DENTAL REVIEW, I will ask you to look it over carefully, and you will find that I have touched upon almost every point that may at some time be valuable, in so much that it covers all the points that are arising continually. I have tried to cover certain important points and not go into tiresome details. I did not go into details regarding the results of extraction or when to extract teeth for purposes of regulation to-night. That is a broad subject, and a very hard one to cover either in a short paper or in an evening's discussion, and I regret very much that the discussion was not confined more to the paper.

With reference to the remarks of Dr. Brophy concerning the use of the X-ray, I will say for his benefit that I have several hundred slides that I have accumulated during the last two or three years, showing not only the pins of crowns approximating near the periphery of the roots, but parts of broaches embedded in the roots of teeth, teeth that are missing, teeth that are delayed in erupting, and many forms of irregularities. I think I have enough to cover three lectures of an hour and a half each, but it is impossible to incorporate the uses of the X-ray in discussing such a subject as was allotted to me this evening. There was a mistake in the announcement of the title of my subject. It was not the injudicious extraction of teeth, but the extraction of teeth. You can readily understand how hard it is to limit one's self to such a universal subject as this, but the facts I have given you are given with the hope that they may be of some benefit and guide you in some puzzling cases that may occur in your practice. The cases I have shown you to-night with the lantern are typical ones.

In regard to the extraction of the cuspids, I made the statement that it was rare where it was necessary to extract, but still there are cases that may come up, and in my practice I believe I have extracted two cuspids, and both of them were extracted in college work, not in my private practice. One of them I showed on the screen to-night.

Dr. Colyer has brought out a new work in which he advises the extraction of either a lateral or a central incisor. Of course, the extraction of the laterals and central incisors may be considered in one respect almost sacrilegious, because it is far better to sacrifice one tooth a little farther back where the result will not show, where the facial expression in speaking and laughing is not marred, and also where the general masticating surfaces are not impaired, if the extraction is confined to the bicuspids.

Dr. J. P. Buckley read a paper on "The Chemistry of Pulp Decomposition Causing Discoloration of the Teeth, and the Applied Chemistry of the Bleaching Process Restoring the Natural Color to the Teeth."

DISCUSSION.

DR. J. E. HINKINS: I am especially gratified to have the honor to open the discussion on a paper of this kind. In fact, there is not much to discuss, for the reason that the paper is based on chemistry, and there is no guesswork about it. In chemistry we have either a chemical reaction or nothing. It is particularly gratifying to have a paper of this kind presented by one of the younger men of our profession along lines at which I have been working for the last ten or twelve years.

I endorse every statement made by the essayist, and wish to say that his paper is pure chemistry from beginning to end. When I studied chemistry eighteen years ago, we were taught that a solution, where the molecules were in a free state, was not a chemical reaction, but within the last three years there has been a revolution in chemical equations and chemical solutions, and this paper is based on the chemistry of to-day. There are many points in the paper that are of interest, and their application is new as applied to dentistry and is original with the essayist.

Referring to the decomposition in the pulp chamber, the statement that ferrous sulphide is produced by hydrogen sulphide or the iron salts is highly questionable. This subject was considered many years ago, and at the time the idea was advanced that nitrogen, hydrogen and ammonium compounds were far in excess of the hydrogen sulphide, and so we thought that hydrogen sulphide was the principal agent which acted on the iron salts and caused discoloration of the teeth. But this idea was opposed.

In regard to the ferric and ferrous solutions, it is questionable, in a putrescent condition of the pulp chamber, whether the iron salts are produced or not. If they are produced, as we have been taught by some text-books on chemistry, we cannot get a precipitate of the sulphide in any acid solution of iron. The hydrogen is far in excess of the other compounds. If there should be any sulphide of iron produced, or ferrous sulphide, NH_3 will absorb water and then act on the H_2S present, which would precipitate the iron salts in whatever form they may be. I quite agree with the essayist that bleaching is accomplished by direct oxidation. In 1893 I read a paper on bleaching teeth by oxalic acid.

The chemistry of the two agents, as I figured it out, was almost identical, i. e., by direct oxidation. The point that the essayist brings out regarding phosphate of calcium I did not consider at that time. He spoke of washing out putrescent pulps with sodium compound. At that time I depended on oxalic acid to form soluble oxalate of iron. While he depends upon phosphate of calcium, I depended on the oxalate of calcium to seal up dentinal tubuli.

I differ from the essayist with regard to the coagulation of albumin. I have analyzed over fifty teeth for coagulation of albumin and the largest per cent. I have ever obtained is 1-3000 of 1 per cent. Some have not been able to find any more than 1-20,000 of 1 per cent. So the idea of coagulating albumin is all bosh. The serum albumin will dissolve itself if you leave it in 95 per cent. of carbolic acid for eight hours.

With reference to discoloration of the teeth, if there is anything that makes me feel discouraged, it is to have a tooth discolor after bleaching it. I have talked with the best chemists in the United States with reference to bleaching teeth, and they have told me that I ought to work it out myself, that dentists knew more about it than they did.

Within the last year and a half chemical equations have been changed. Ionization has come into vogue, and disassociation of atoms and molecules has taken place. It has revolutionized the chemistry of to-day. It is really marvelous to see what the chemists of to-day have brought out within the last two or three years.

With reference to the second discoloration of the teeth, I believe it is due to the osmotic action of the circulation of the blood, brought about by ionization of the disassociated atoms and molecules of the hemoglobin in the blood which is supposed to be the coloring matter. This, however, is largely theory.

When we come to organic chemistry, it is supposed that the ferrous salts, not the ferric, as soon as the blood is brought in contact with the atmosphere or any foreign body it readily oxidizes and is changed or converted into a ferric salt of some kind. In other words, as soon as it is exposed to the atmosphere, it will change from ferrous salts to ferric, and discoloration occurs promptly.

Dr. A. W. Harlan: Part of my speech has been made by Dr. Hinkins. I do not accept his analysis with reference to the percentage of albumin, when he said that he was unable to obtain more than 1-3000 of 1 per cent. from the animal matter of a tooth.

With reference to bleaching teeth, as advocated by Dr. Buckley in his very complete and thorough paper, I would say that there are a few things about bleaching teeth that I know something of myself, and the theory he has advanced will probably be one that can be accepted by chemists. The principal thing that the members of this Society probably need at the present time, outside of the pure chemical history of bleaching, is how to do it. The method of making a solution of peroxide of sodium, detailed by a previous speaker, is quite correct so far as its analysis is concerned; but the actual method of bleaching teeth with peroxide of sodium was not gone into as detailed by Dr. Buckley. If you will take a tooth, after having previously filled the root, and gotten the tooth free from ordinary decay and softening of dentine, etc., and have it slightly moistened with distilled water, and add the peroxide of sodium *dry* to the interior of the tooth, so that there will be a decided effervescence, in that way you will probably get the best expression of the bleaching effect. I have experimented with the addition of sulphuric and hydrochloric acids in bleaching teeth, but that does not accomplish perfect bleaching. It accomplishes another purpose, however. If you do not wish to bleach a tooth, and wish to find the entrance of the fine root canals, you can find them easier in this way than by any other method. The true theory of bleaching teeth or bleaching anything is to render the coloring matter soluble, so that it can be washed out, drawn out, or blown out, and leave the tooth free from the elements of discoloration. If you will study the history of bleaching, as detailed in the Encyclopedia Britannica, in Watt's Dictionary of Chemistry, and in Thorpe's Dictionary of Applied Chemistry, you will find that as early as 1807 it was recognized in the bleaching of wool and animal fabrics that the element of rediscoloration by iron was noticed by them, and the so-called lime sour. It was a portion of the method of bleaching employed at that time, and was supposed to get rid of any of the contaminations of iron in wool, because it was stated that if they were not gotten out, subsequently the wool would become yellow. Of course, they defeated the object of bleaching. Until within a few years the method of bleaching by peroxide of hydrogen or hydrogen dioxide was not practiced to any considerable extent on account of the expense and the insufficient knowledge relating to it. But so far as bleaching itself is concerned, if you will decompose chloride of sodium in a tooth with the electric current, which is the indirect method, you will get bleaching almost as perfect as you will by the direct method, which involves the use of sodium peroxide, and if you do not afterward wash this tooth and rewash it, and keep at it until you have got every particle removed mechanically, your tooth will again discolor.

One of the valuable points presented by Dr. Buckley in connection with this paper (and the whole of it is exceedingly valuable), is the proposition to use precipitated calcium phosphate in the tooth. I am pretty well acquainted with the experimental literature of the subject, and I believe this is the first time its use has been proposed in a tooth. After reading Dr. Buckley's paper to-day, I took the trouble to prepare three specimens of precipitated calcium phosphate, with three fluids, one of them with distilled water. The calcium phosphate is not soluble in distilled water, or at least it is so little soluble that it is not appreciable. In Watt's Dictionary of Applied Chemistry, it is stated that there is a certain menstruum in which the calcium phosphate is soluble. I hold in my hand a specimen of chemically pure calcium phosphate that has been for a few hours in the presence of a solution of chloride of sodium, forty grains to the ounce of water, and so far as the naked eye can determine, even that, although it is stated to be soluble in chloride of sodium, shows the fluid is quite clear. I have another one where equal parts of distilled water and aqua ammonia are put together and added to the calcium phosphate, and even that, which is said to be a solvent for calcium phosphate, shows that it is very little dissolved. As to the things that enter into a tooth salt, which may get in there through the osmotic action that Dr. Hinkins spoke of, causing rediscoloration, ammonium or ammonium hydroxide, which is the product of decomposition in the putrefaction of the pulp, which may accidentally get in there, and distilled water, which may get into the tooth, if none of these outside of the mouth affect the calcium phosphate, there is every reason to believe that the forcing of the paste that Dr. Buckley speaks of into the desiccated tooth may have a tendency to, and probably will, prevent the rediscoloration, providing the coloring matter has been discharged and washed out. It is only by doing this that we can prevent rediscoloration.

The whole subject of bleaching is one that should engage your earnest attention, and I do not know how you can be stimulated to do anything of that character in a scientific manner without studying the history of the bleaching of cotton and silk and feathers and bone and ivory. All of these will lead up to the consideration of the bleaching of teeth, and if you gentlemen were to spend a whole evening at some future time on the technique of bleaching, and would present some of the methods of instantaneous bleaching before the Society, I would engage for one to bleach ivory for you and perhaps something else, and Dr. Hinkins would perhaps bleach feathers or bone, or something of that sort, and Dr. Buckley would bleach a cow's or a horse's tooth, so that the bulk of it would show to you the actual process. These are things that are absolutely in their infancy, so far as dental surgery is concerned, and I think we can well afford to spend a little more time in that direction. When this paper is published in full, it will open the eyes of some of those amateur chemists who know so little about bleaching and who simply copy one from the other.

Dr. Buckley (closing the discussion): I have been misunderstood with reference to my theory of the coagulation of albumin. I think the teeth that Dr. Hinkins analyzed were freshly extracted teeth. I stated that the by-product in the indirect method of bleaching was hydrochloric acid, a coagulator of albumin, and while I stated that 25 per cent. pyrozone was also an instantaneous coagulator of albumin, I did not state that we had any albumin in a putrescent pulp to be coagulated, because I believe we have not. We have a semi-putrid substance, however, which I referred to, and when I mentioned the coagulation of albumin I meant the escharotic property of 25 per cent. pyrozone and hydrochloric acid, and that this escharotic action upon the partially decomposed pulp had undoubtedly a coagulating action, which is liable to mechanically form an obstruction and thereby prevent the thorough removal of that part of the oxidized coloring matter, which is insoluble and must be removed mechanically, if at all. But, if you will pardon me, I would like to say a word or two with reference to the possibility of albumin in a putrescent pulp. If we review our physiological chemistry, or the chemistry of the digestive apparatus, the mouth, stomach and intestines, we can at once determine whether or not there could possibly be any albumin in a pulp which has become decomposed. In order that the body may utilize the substances which are taken into it as food, all of the non-crystallizable principles, starch, albumin, fats, must be changed to crystallizable substances, or diffusible substances, before they are diffused through the animal membranes and get from the intestinal tract into the circulation. The action of the ptyaline upon starch changes it to a crystallizable substance or sugar, and the medium through which that ptyaline acts must be alkaline.

Normal saliva must be alkaline in its reaction, else we would not have the action of the ptyaline upon the starch. When we go on down into the stomach, the property of the pepsin of the gastric juice is to convert the proteids or albuminous substances into crystallizable substances, that they may be diffused through the animal membranes and get into the circulation. And in order that we may have pepsin act upon these substances, and change them to crystallizable ones we must have an acid medium, and it is the albumins or gelatines that are changed in the stomach. When we go on to the small intestine, we have the acid contents of the stomach rendered alkaline by the secretion of bile, the pancreatic juice and the fluid that comes from the lining of the small intestine, before the ferment of the pancreatic juice or the microörganisms of this intestine can act upon the fats, to change them into a diffusible state. In the mouth then we must have an alkaline medium for the ptyaline to act, in the stomach an acid medium for the pepsin to act and to change the proteids into crystallizable substances. In the small intestine we must have an alkaline medium in which the ferment of the pancreatic juice can act. In the decomposition of a pulp, there is no one who can doubt but what the contents of the pulp chamber is acid. The acid contents of a pulp chamber would facilitate the action of the microörganisms which have the property of converting albuminous substances or proteids into peptones, which are soluble, then the peptones are broken up and we have the final products. This semi-putrid substance I referred to is not albumin. But what is it? It must be largely composed of fats. For if the contents of the pulp canal is acid, it would hinder the action of the microörganisms that have the power, if the contents were alkaline, to convert these fats into diffusible substances or saponify them when they can be disposed of. If this semi-putrid substance is largely composed of fats the escharotic property of hydrochloric acid, or 25 per cent. pyrozone would put it in such a state that it would be hard to remove. We must use a chemical in the bleaching of a tooth, the by-product of which must possess an alkaline reaction to render the contents of the pulp chamber alkaline, in order that we may have the saponifying action of the substance we use upon the semi-putrid substance, which must be composed of fats or some extractive matters.

I wish to thank the Society for the kind way in which my paper has been received.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel, March 19th, 1901, with Dr. L. L. Davis in the chair.

Dr. A. W. Harlan read a paper on "Pyorrhoea Alveolaris," with illustrations. See page 544.

DISCUSSION.

Dr. Edward K. Wedelstaedt, of St. Paul, Minnesota, was called upon to open the discussion. He said: The very comprehensive and excellent paper to which we have just listened has not only greatly pleased me, but has given me so much food for reflection that I feel that I am not in a position to deal with this subject as intelligently as some of the gentlemen who are present. I know very little about pyorrhoea alveolaris. When cases of pyorrhoea alveolaris come to me, I send them to some one else, for the reason that I believe those who are versed in the handling of this disease are better able to treat it than I am; therefore, I get rid of the patients who are suffering from the effects of this disease.

It is a great pleasure for me to have been here this evening, but a still greater pleasure to have heard this admirable paper. I wish to thank you for the hospitality you have shown toward me, and I wish there were more societies in the United States conducted along your lines.

Dr Robert Good: I think this the best paper that has been written on pyorrhoea alveolaris. Every man in this room, if he follows what Dr. Harlan has said regarding this disease, can cure almost any case of pyorrhoea that comes to his office. We should make every effort to cure this disease, because there are more teeth lost through pyorrhoea than any other one cause. I have a patient twelve years old, a girl, who had one of the worst cases I have ever seen of pyorrhoea, but I succeeded in getting her gums in first class condition.

Dr. Wedelstaedt: Is not this a disease that should be treated by specialists?

Dr. Good: The specialist can handle it much better than the average dentist. It takes special training and great skill to remove the deposits.

Dr. Woolley: Have you made any investigations as to whether pyorrhoea alveolaris is a local or systemic trouble?

Dr. Good: I believe that it is entirely local, and I am satisfied local surgical interference is the only way to accomplish a cure. If the pus continues to discharge after being treated surgically, it is because of the failure of the operator to remove all deposits.

If the members of the profession will read this paper carefully, and carry out the suggestions laid down by Dr. Harlan, I feel confident they will obtain results that are gratifying.

Dr. J. E. Hinkins: I am not in a position to discuss this paper, although I enjoyed it as much as any of you. For the last two or three years I have been somewhat closely associated with one of the best scientific laboratories in this country, namely, the laboratory of the University of Chicago, and I know from my own observation that a good deal of work has been and is being done along the line of bacteriology of the mouth, as well as along the line of physiological chemistry by Professor Loeb, who has attained a world-wide reputation, and from what I have seen there, it is a question in my mind as to what is the cause of pyorrhoea alveolaris. Some cases of pyorrhoea alveolaris are undoubtedly of traumatic origin; while in others, from the information we have on the subject, it seems to be entirely a systemic disease. Some observers look upon it as an infection. But when we begin to work in the bacteriological and chemical laboratories along these lines, we come in contact with obstacles right and left. We start out to look for a certain class of bacteria, study their habitations, and are ready to believe that we have found something. When, however, we come to boil it down, we find out we have some fungous growth, and the thing loses its identity almost entirely. But there is one thing we have always found in almost every case that I have had an opportunity to watch and study, and that is we have found more or less organic acids. In some few cases we found alkalies, and the question arises, is this trouble produced by the action of bacteria from the fermentation that takes place, with an increase of the acid produced by the fermentation of these bacteria, or does the acid form a culture medium for the bacteria to live on which destroys the membrane?

I regret that I am not able financially and mentally to follow up this work as closely as I would like to do, as I have to practice dentistry for a living, and I cannot do much along this line of work.

Dr. J. W. Wassall: It is now a fairly well established fact that the majority of practitioners can cope with the disorder successfully. This was not true, perhaps ten years ago, and our progress in the treatment of this disease is due in a very large measure to the personal efforts of a few men like Dr. Harlan. To prevent recurrence of the disease, after the active stages have been controlled, I instruct patients to use extraordinary friction with toothbrushes generally.

Dr. Hinkins: You massaged the gums?

Dr. Wassall: Yes, half an inch below the necks of the teeth, or probably three-quarters of an inch. I instruct patients to brush the gums as well as the teeth.

Dr. Woolley: Do you commence with a soft brush and then take up a hard one?

Dr. Wassall: I commence with a hard brush. For ten days or two weeks the patient will have sore gums, but they gradually learn to tolerate hard brushes.

Dr. E. A. Royce: I do not feel that I can add anything to what has been said in regard to pyorrhoea alveolaris, but after listening to such an admirable paper it would seem almost a lack of courtesy to the essayist not to express personal thanks for the able manner in which he has discussed this subject, as well as the methods of treatment.

When Dr. Wedelstaedt spoke of sending patients with pyorrhoea alveolaris to dental specialists for treatment, I wondered how many of us are willing to do that. Many of us have patients with pyorrhoea alveolaris who are well advanced in years, and if they were referred to specialists for treatment I should think there would be a disposition on the part of those patients to remain with those specialists. The number of cases in which we have more or less trouble with the gums or the disease known as pyorrhoea alveolaris is very large, and I think perhaps the proportion of cures in the severe cases we treat would prove to be small, if we kept track of our cases for any length of time.

As I have previously said, I merely rise to express my appreciation of the paper and its discussion by those who are better posted in regard to this disease than myself.

Dr. A. O. Hunt: I do not know that I can add anything new to the knowledge we have obtained to-night in the rehearsal of the various theories in regard to pyorrhoea alveolaris. However, I think this is the time and place to positively state that pyorrhoea is one of those diseases of the oral cavity that the qualified dentist of to-day is able to take care of and treat. There is still more or less theory regarding the etiology of this disease, but nevertheless, with all its uncertainty, the results of careful surgical manipulation are such that it is becoming generally known among us what character of treatment is suitable for these cases at the present time, and if these methods are followed carefully and persistently and the patient follows the directions of the dentist, there are probably few cases indeed of pyorrhoea that cannot be cured absolutely or the majority of the teeth saved for better usefulness.

Dr. Harlan spoke of a great many different names for this disease, and each advocate of a name for the disease has had an argument to present why his particular title for the disease should be accepted in preference to others, but no one has as yet presented a name that seems in a generic way to give a correct description of the conditions that exist in pyorrhoea, and it will probably take more clinical observations than have yet been made, and considerably more laboratory investigations before we can arrive at a name that will be acceptable and at the same time define the conditions that exist.

I was much pleased in reading a paper by Mitchell in the last issue of the *Dental Cosmos*, in which he spoke of the disease as a necrobiosis. In a short paper, such as that was, the writer had very little opportunity to go into minute details and give the reasons which led him to draw the conclusions he presented. Whether he has studied the subject carefully and exhaustively or not, I do not know. But what he did present in connection with his article impressed me as following along the proper lines descriptive of this disease as we find it, and also the name itself is more nearly descriptive of the condition than any name I have yet seen.

I was very much pleased with the paper and the different methods described therein are unquestionably correct, no matter what the etiology of the disease may be. Those methods of treatment, if followed out, will doubtless cure the majority of cases of pyorrhoea alveolaris.

Dr. E. R. Carpenter: I am deeply grateful to Dr. Harlan for having presented this paper. It covers the subject more thoroughly and intelligently than any paper I have ever read or listened to. During the reading of the paper there was one thought that occurred to me. In more than four-fifths of the cases of pyorrhoea alveolaris that have come to me for treatment I have noticed an absence or loss of the teeth of from one to half a dozen. In nearly all of those cases the occlusion was so changed that I found invariably the teeth that were suffering most from pyorrhoea were those immediately in front or back of the space caused by the loss of one or more teeth, on account of the turning of those teeth, the abnormal hammering or knocking of the cusps of the teeth as they have come together. By means of carbon paper I would find out the teeth that were being hammered on the hardest, relieve them of the strain by grinding, and then proceed with the treatment afterward. After having removed carefully and thoroughly the deposits, I proceeded with my treatment. Before dismissing any case as cured or improved, according to the chronicity of the case, I would again test and see what change, if any, had taken place in the position of those teeth on each side of the spaces as the gums have healed and hardened around the roots and necks of the teeth.

I have been much pleased with a new medicine that has been suggested within the last three months, namely, a five per cent solution of chromic acid. You doubtless know that chromic acid is a great oxidizer of tissue. I have obtained excellent results from its use so far, if so short a time can be considered a fair test.

DR. E. J. PERRY: I want to thank Dr. Harlan for his admirable paper. It may be accepted as absolutely orthodox. Perhaps the most perplexing thing I have to deal with in my own practice is Riggs' disease or pyorrhoea alveolaris. I have not been able to treat it as successfully as some dentists. I believe, however, I have cured a few cases of this disease. I have never bothered myself very much about the etiology of the disease. The treatment of pyorrhoea alveolaris in my hands is largely mechanical, and I find that my success in dealing with it is proportionate to the thoroughness with which I remove the serumal calculi from the roots of the teeth.

Dr. Wassall's remarks concerning massage of the gums as a prophylactic measure are as much to the point as anything that has been said this evening. Whenever I have occasion to speak of disease of the soft tissues of the mouth to my patients, I endeavor to impress upon them the necessity of caring for the soft tissues. I say to them that I can succeed to a reasonable extent in treating the hard tissues mechanically, but the soft tissues they must take care of themselves. In these days, when much of our food is prepared for us in the kitchen, the mechanical uses of the teeth are very much lessened. Friction of the gums, which is of necessity for the purpose of keeping them in health, is not brought into use to the same extent as formerly. The teeth are not polished, consequently I instruct my patients to take the clean end of a handkerchief, or the clean end of a towel, several times a day, particularly night and morning, and rub it around the gums vigorously, inside and out, with the forefinger, in this way thoroughly massaging the gums. The gums of such people need exercise, as well as the teeth. I impress upon them the necessity of massaging, rubbing, or of causing friction of the gums.

While I do not think calcic inflammation was mentioned in the paper, still I have always supposed that pyorrhoea alveolaris had its beginning, for the most part, in calcic inflammation, which Dr. Black describes as being excited by ordinary salivary calculi, leading to deposits of sanguinary tartar. Therefore, I think it important that all salivary calculi be removed from the teeth. I often speak of this to my patients.

I am sure that I shall read Dr. Harlan's paper with a good deal of interest after it has been published, and I think we owe him a debt of gratitude for the enormous amount of work that he has evidently put on it in its preparation. I am very glad to have been permitted to listen to such an exhaustive treatise upon the subject.

Dr. C. N. Johnson: It seems really useless for me to take up any time of the Society in discussing this paper because I can throw no light upon it. I desire, however, to express my appreciation of it, and I think it is a clear-cut résumé of the subject up to date. It embodies more points in a given space than any other paper that has been written on the subject. It gives us the keynote to the treatment of the disease, as well as a working basis for us in practice. This disease has seemed to me to be the most unsatisfactory of any affection we have to cope with in dental practice. It is most indefinite in regard to its etiology. I believe there is a future for some man who will enter into a systematic and scientific series of experiments to learn something about the nature of this disease. I believe there are different manifestations of this disease that are brought about by different causes, and that has been one of the puzzles to me in the management of it. Dr. Good stated that he believed pyorrhoea alveolaris to be an entirely local disease and amenable to local treatment. There is this feature I have noticed in regard to the disease: In some cases, where I have had the least hope, where I have given the patients to understand that the disease was a serious matter, and that it would probably be a hard contest to save the teeth, those cases have frequently cleared up without any difficulty at all practically, while other cases which seemed exactly the same and were subjected to the same local treatment have been very disappointing. So it does seem to me there must be some constitutional effect that influences the disease. One discouraging feature in connection with the management of this disease is that we cannot always impress our patients with its seriousness. In many instances, when we have practically cured patients, and let them go for a little while, feeling comfortably, they neglect their teeth and the disease returns. We sometimes invite a laugh at our expense when we try to frighten a patient in regard to the seriousness of pyorrhoea alveolaris. When I first began to practice dentistry in Chicago, I had a patient come to me, and I examined his teeth, and told him that he was going to lose his teeth unless he gave extra care to them and consulted a dentist regularly for the purpose of having the deposits removed. It is about fourteen years since I gave him that advice, and he has not given his teeth any particular attention. He comes to see me semi-occasionally. Sometimes I do not see him for a year, and when he does come he always smilingly reminds me about my having said that his teeth would be lost from pyorrhoea alveolaris, but I find that his teeth are as good to-day as when I made the prediction. I have seen other cases where there was no reason why the disease could not have been checked and readily managed if treated promptly. There are different manifestations of the disease which we should study more thoroughly. The most discouraging cases that come to me are those in which we have no discharge from the gum margins whatever; no deposits upon the teeth that we can find; no pockets apparently, but simply a progressive loosening of the teeth, where the gum seems to be normally attached to the necks of the teeth, but where they move back and forth. I had a lady in my office a short time ago whose upper second molar was so loose that it would move bucco-lingually so as almost to lean on its side, but there was no discharge or deposit whatever about the tooth, and in probing with a view to finding a pocket, I found no evidence of one.

I do hope that some member of the profession will take this matter up and study it thoroughly, and see if we cannot learn something about the etiology of this disease. We treat our cases as best we know how from a clinical point of view and from experience, but we could treat the disease much more intelligently if we knew the etiology of it. I consider this paper as another step along the line of combating the disease, and I am grateful to Dr. Harlan for having presented it to us.

Dr. J. G. Reid: I am satisfied that I have cured some cases of pyorrhoea alveolaris, while others I have not. It is not because I did not try to do so, however. I do not think that the etiology of the disease is known. I am inclined to agree with those who believe that it is a local disease and may be influenced by constitutional defects, but to say that the etiology of the disease is a constitutional one is going a little too far. I have not seen enough to prove that conclusively. The treatment of the disease is unquestionably purely surgical. In those cases in which I have been able to free the roots of the teeth from the deposits about them, and there has been tissue enough left about those teeth for them to become secure and firm, healing has taken place. If we have tissue enough left to secure the firmness of the teeth after they are put in proper shape, I believe the disease is amenable to cure, and that the teeth will be continued in usefulness for many years. But if there is not enough healthy tissue left upon which to build, it is a hopeless case. I do not believe it is curable.

Nothing has been said in regard to the maintenance of the teeth during the treatment or the methods that are adopted for holding them in position. The wiring of teeth is not the best possible way of retaining them firmly in position, so as to keep them immovable. I believe wires are too easily bent under the stress of mastication and the teeth will move. I do not believe wires can be applied sufficiently firm about the teeth to prevent them from moving. That has been my experience. I have tried it and have failed. The only way to hold the teeth in position is to properly band them, that is, put rigid stiff bands about them and secure them in position.

One of the greatest difficulties I have to contend with in treating cases of pyorrhoea alveolaris is to find some places where I have not an instrument that will reach where I want it in order to remove the deposits. I suppose that if we had a roomful of instruments cases would come under our care now and then where we would be unable to reach the deposits and remove them by any form of instrument.

I frequently tell my patients that I am thoroughly imbued with the idea that massage of the gums is one of the best things incidentally that can be undertaken toward curing pyorrhoea. I do not know whether a stiff brush will accomplish the results mentioned by Dr. Wassall, but I instruct my patients to use their index finger and to rub their gums when they are at home, giving them thorough massage with the finger inside and out. This should be done many times a day, when an opportunity presents itself.

Dr. Good referred to the discouraging features in connection with the treatment of pyorrhoea alveolaris. Whether we are able to cure the disease or not, we should do our best for patients. It is worth the effort. If we fail, we should not be discouraged. We make failures in almost everything we undertake, I do not care what department of dentistry we practice, and it is our business to make an effort under all circumstances to treat and cure the disease if we can. There are too many dentists who overlook that fact. Patients come to us and say that this or that dentist told them that he could not do anything with their teeth; that they were incurable. Only recently I encountered one of those cases. I get such cases once or twice a year. The teeth of such patients have never received the attention that they should at the hands of other dentists. They have not made any effort to remove the deposits from about the teeth that extend beneath the margin of the gum. A lady patient, who was in my office to-day, whom I treated for pyorrhoea alveolaris, had been under the care of one of our young dentists in the city, who had had charge of her teeth for five years and a half and had never removed the deposits from around the roots of the teeth, and yet she informed me that her teeth were cleaned three times a year. He charged her $5.00 for brushing her teeth. I spent twenty-four hours in removing the deposits about her teeth, which had never been disturbed since she had been under the care of that dentist. He did excellent operative work in her mouth. There is no excuse to be offered except that he was negligent in taking care of her gums and removing salivary calculi that were deposited about the roots of the teeth. I speak of this case to call attention to the point brought out by Dr. Good. Such cases come to the notice of you and me, and some dentists talk about cleaning the teeth when they do not do so.

Dr. J. H. Woolley: I do not know that I can enlighten any one in regard to this subject. I have enjoyed the paper and have been much benefited by it. One of the most important features in connection with pyorrhoea alveolaris is the manipulative ability to remove the tartar from the teeth. That requires almost special education in the training of the hand. When the hand is well trained it is marvelous what can be accomplished. In this connection I recall a little story of a blind man in Indiana who was able to repair a clock in a clock tower after every watchmaker in the city had failed to do so. He did it through his manipulative ability to do delicate work among the wheels of the clock. In the same way a dentist must have considerable manipulative ability to remove tartar from the teeth dextrously. This is the first step toward restoration to health of the parts surrounding the teeth. I recall an experience which is in direct line with that. In order to educate my hand properly, I started to carve in ivory, and I found a wonderful improvement in the sense of touch, and that is one of the great points in the removal of calculus, namely, of having the nerves of sensation so perfectly trained that one can feel the finest granules, and in that way we may make our successes assured. I think that the best educators of the present day are considering the symmetrical growth of students, combining manual training with intellectual training, where the hands are educated to be dextrously used in all the mechanical and other work of life.

As regards turning our patients over to other dentists, it seems to me that we ought to avoid that. If we find ourselves failures in a special line of work, we should study with a view of improving ourselves.

Dr. Frank H. Gardiner: I have enjoyed the paper of Dr. Harlan very much, and I consider it a very valuable contribution to the subject of pyorrhoea alveolaris. I believe a good deal can be done toward effecting a cure in cases of pyorrhoea alveolaris if we spend sufficient time in removing the deposits from the roots and necks of teeth. There is one particular point that I desire to call attention to, and it is this: A patient can help the dentist very materially when there are deposits about the necks of the teeth. He can tell you when you strike the deposit and whether you have removed it or not.

Dr. L. L. Davis: Considering the instruction that we have received from Dr. Harlan during the last eighteen years, it is a surprise to me that there are so many dentists in the city of Chicago who cannot diagnose pyorrhoea alveolaris. I have had several patients sent to me within the last six months whose cases were diagnosed as pyorrhoea, and they were simply salivary calculus.

I have seen a number of cases such as mentioned by Dr. Reid, who had been in the hands of dentists for years without having the deposits about the teeth thoroughly removed, and yet, so far as their operative work is concerned, it was all right. The patients have had pyorrhoea extending over many years without the dentists knowing that there was anything wrong with their teeth.

Dr. Hunt touched upon a point that I desired to mention, in reference to the paper of Dr. Mitchell which appeared in the last issue of the *Dental Cosmos.* This paper impressed me as being a very excellent one. The name given the disease appeals to me very strongly. He calls it necrobiosis. As he describes it, it means simply a death of the cell tissue. There is a melting down of the hard tissues. He goes on to explain that it is not a necrosis because in necrosis the bone is removed in particles or sequelæ. But as Dr. Harlan has mentioned, it is a melting down of bone, and necrobiosis is really the best term that has been applied to this disease.

There is one point in regard to the treatment that has been mentioned by Dr. Woolley that I consider the keynote to success—manipulative ability, or manipulation and delicacy of touch. Dr. Younger's idea of having instruments with rubber handles or steel with some softer material applied where the finger tips press will preserve the delicacy of touch and would have much to do in successfully treating this condition.

Dr. J. H. Woolley: I learned a number of years ago a useful lesson from Dr. Gordon Palmer. It was in reference to operating. He said that if you needed an instrument for a particular case, and you did not have it on hand, you should go to work and make one for the case, believing that by so doing the operation would be attended with a more decided success. I was sorry to hear Dr. Reid say that he did not attempt to make an instrument to use in connection with some of the cases he described.

Dr. Harlan (closing the discussion): The discussion of this subject has covered pretty nearly every phase of it, and I may say that in preparing this paper I spent about a hundred and fifty hours in looking up what other authors had to say about it.

The question of handling the soft tissues around the teeth, after surgical operations have been made and the teeth have been fixed, is one that must be dealt with according to the indications. If there is thickening of the gums, or if they bleed easily, they must be vigorously rubbed, or they must have appropriate remedies applied to them that will have a tendency to reduce the size and cause the soft tissues to closely approximate the necks and roots of the teeth. A great many remedies have been used by different men. I have used quite a number myself at different times. One of the things that I use around the roots of teeth on the soft tissues is a solution of iodide of potassium. Another thing that I recommend my patients to use, and that I give them to use, is the finely powdered South American soaptree bark to brush their teeth with. Another agent I recommend some of them to use is a dentrifice composed of eight parts of precipitated chalk and one part of finely powdered sulphur, which is flavored with peppermint or some oil that is known to be highly antiseptic. Some persons may dislike the odor of peppermint; if they do, I use something else, as sassafras, but never wintergreen, because that is not an antiseptic or disinfectant.

Dr. Johnson has asked me to say something about the application of Kowarska paste, and I will say that in the cases in which I have used it I had to apply the rubber dam over the teeth to be coated, and you should get the teeth dry and clean and wash them repeatedly with alcohol or some alkaline substance, as bicarbonate of soda, until they are thoroughly dried and clean. I tie silk around the teeth, and I prefer to parrafin the silk myself, but I suppose wax will answer the purpose, and make a couple of rows of ligatures around the teeth, and tie it around each individual tooth so as to get the teeth in the proper line, then apply the paste directly to the teeth with a wooden (pine) or ivory spatula, and let the patient sit in an adjoining room until it gets hard. If it is of the proper consistency it will get hard in a couple of hours or so. While it is getting hard, you can give the patient something to read, and you need not be afraid of using too much of it. After it has become hard you paint the surface with something for the time being, like chloro-percha solution, or a gutta-percha solution, let it dry, then take the rubber dam off, and in a day or two you can trim up the paste and it is then in such shape as you want it to be. You can get all the colors you desire from the stationer's or art stores. You can make it gray, grayish-white, pinkish, or any color you desire if you make individual solutions. It seems to stick to the teeth well. It must be put all around a tooth, and must not be applied on one side because it will peel off. I have tried both ways, and after the teeth are brought together the occlusion is as nearly perfect as possible, so that there will be no undue pressure on any particular tooth. That is an important point, no matter what you use.

With reference to the banding and wiring of teeth, I want to say that the real reason for using silver-gold wire and silver-gold bands is that you have to support the teeth mechanically, and you have a therapeutic agent that is constant in its effect. If you use gold, platinum, or rubber bands, you do not have the effect of silver, it is wasting a little all the time, and I think if you were to manipulate a sufficient length of time with 27 gauge silver-gold wire by putting two or three strands around the teeth and bringing them together, as we saw in one of the models that has been passed around, you can make them sufficiently rigid. Dr. Kirk suggested to me, when he was in Chicago last month, and saw these models, that he had been in the habit, when in active practice, of frequently using brass wire around the teeth. He said the brass wire discolored the teeth a little, but he did not see any particular objection to it on that account, and he found that a good many of his cases got along very well with brass wire. But silver-gold wire and silver-gold bands, so far as our present knowledge goes, are better than any other kind of metal that can be used. The wires and bands are firm in some cases, but with pure silver, or that which is only slightly alloyed with gold, we do not seem to get along very well, because it corrodes too much.

The removal of small deposits from irregularly-shaped pockets is a thing that requires a great deal of delicacy of manipulation and patience. It is very important in some cases to determine whether or not the pulp is dead. This should be determined in the beginning. You can do this by the heat or cold test, or by the electric light test, or all combined. I have had quite a number of cases sent to me by dentists where they had been injecting rainwater and other substances into the pouches, slightly medicated, and no good was done because the pulps of the teeth were dead. As soon as we got the roots thoroughly disinfected, and filled and scraped on the outside, they began to heal from the bottom without any trouble.

With reference to those teeth where we have no pockets or pouches, and no detachment of the gum from the gingival margin, and still find the alveolar process wasted, so that the teeth will move back and forth, I do not imagine that is what you would call pyorrhoea alveolaris as we are discussing it. It is probably another form of the disease which is not so common as the one we spoke of. In those cases the pulps are never dead. If you were to extract a tooth you would not find nodules on it or the apices of the roots covered over with nodular deposits.

With reference to uric acid, urea and urates, I would recommend everyone present to buy the book on gout by Arthur P. Luff. It costs $2.00, and tells you more about the formation of uric acid and of urea and things of that kind than any of the more pretentious works that we have, and it will enable you to distinguish clearly why there may be urea or uric acid extracted from the deposits on the roots of teeth, and how it stands in a causative relation to the loosening of the teeth. It is purely incidental, and is not the cause of it. There are some other chapters that deal with the quality and quantity of waters to be used by people who are suffering from the so-called uric acid diathesis. Again, the administration of waters containing lithia and other salts may in some instances be the cause of the trouble instead of curing it. The average person who has a hundred five-grain tablets of lithia or lithia bitartrate, or something of that sort, and puts them into water that contains anywhere from nineteen to twenty-three parts in a thousand of solid constituents containing agents that are deleterious, does not get any benefit whatever from them, and if he is going to use lithia or lithia salts they should be dissolved in waters that are free from contaminating agencies. Practitioners are not particular enough to specify that. Again, to put them in Waukesha water or some other kind of water may be the very worst thing because there may be constituents in the water which will neutralize and nullify the effects of the lithia. According to quite a number of the best writers in such medical journals as the *Medical Record* and the New York *Medical Journal*, which publish contributions of a high grade, it is a question whether this almost universal recommendation of things for the elimination of poisonous products is not doing more harm than good. I am in the habit of recommending my patients to drink a natural lithia water. We have what is known as the Aurora Lithia Water, which is not an artificially impregnated water, and it contains a sufficient quantity of lithia to eliminate the products that we expect to eliminate by having people use that water. It is comparatively cheap, and there is no reason why it should be contaminated by the dealers because it is easily procured and flows in such quantities that it can be supplied in abundance to the people of Chicago. I would not take water of that kind that came in tins or tanks, but in glass bottles or jars. If I am to prescribe it, I insist upon the patient getting what is right, or I will order it for him myself, so that he may get the right kind of water, because that is important.

INSTITUTE OF DENTAL PEDAGOGICS. EIGHTH ANNUAL MEETING, HELD AT NASHVILLE, TENN., DECEMBER, 1900.

Dr. F. B. Noyes read a paper on "The Use of the Lantern in Teaching Dental Histology in its Relation to Operative Dentistry."

DISCUSSION.

Dr. H. T. Smith: Mr. President and gentlemen: I hardly know what to say to you about this excellent paper. I had the privilege of reading it coming down on the train, but it has been so elaborated by the impromptu remarks and the excellent pictures, and it covers so vast a field I do not know what to say.

We have had in operation in the Ohio College for a number of years a Colt lantern, such as the doctor is using, and have found it a very useful teaching method. I personally am not a teacher of histology and I should, for that reason, not go into the histological part of the paper at all. But I do know something of the technic of lantern work, and the preparation of slides, having worked at that sort of thing in our own laboratory, and I hoped that the doctor would bring out, in a short way, the technic of the preparation of these slides.

I shall confine what few remarks I have to the position and placing of the lantern, and its use, in a technical way. Our own lantern is placed in a lecture room which is not brilliantly lighted. A screen is located in a comparatively dark corner and the lantern is in position at the lecturer's stand at all times. The pictures are projected on the screen without darkening the room in the least, and the control of the class is not lost in any way. To all of you who have used the lantern, these points would arise as being advantageous to the proper control of the class.

The lantern, I think, is useful just in proportion as it can be used conveniently and quickly by the lecturer at his rostrum. If he is to make a pictorial display of his lecture, he weakens his lecture just that much. If it is to supplement his lecture, if he can supplement his word pictures with pictures on the screen, I think it is the very greatest aid. I have been a believer, personally, in diagrammatic illustrations.

I remember particularly in my student days a professor who was ambidextrous at the blackboard with his chalk, and the impressions we got from the pictures he drew, with colored chalk, were very pleasing indeed; but this lantern work, while it is of the very greatest assistance to the student, does not help the lecturer in becoming a trained illustrator.

I concede, and I think you all will, the importance of dental histology in the dental curriculum, as the doctor has presented it to us, and the great advantage there is in studying it by means of the lantern. I know of one dental teacher who has a lantern set up in his own home, so that he can, while he is at work in his study, try his slides as he makes them. I might mention to you a method of preparing a slide, a diagrammatic slide, quickly, while you are in your study preparing for a lecture. This is by the use of thin artist's tracing paper of the most translucent type you are able to obtain. This piece of tracing paper can be placed over any illustration you care to use, tracing it with India ink—ordinary ink will do quite well. Such a drawing can be made in a minute and the tracing paper placed between two cover glasses, which need not necessarily be even sealed together, but can be put together with clips; the slide then becomes a useful one for your next day's lecture. These slides are exceedingly useful and quickly prepared, and they are diagrammatic. You can number them and letter them, as you please, and you can include more or less of the illustration as you please, in your slide.

The points brought out by the doctor in the preparation of cavity walls and enamel margins I have never seen so beautifully presented. I think we might improve some of our ideas of the preparation of enamel walls from this time on. At this late hour I have nothing more to say on the subject, but I should be glad to have the doctor, if the time allows, present his methods of preparing the slides that he has shown and go a little further into the lantern technic.

Dr. Thos. E. Weeks: The first part of the paper hardly admits of discussion—that histology should form one of the foundation stones of the dental student's education and should have a permanent place in the curriculum of every school. How you give it and when you give it, of course, depend largely upon your environment and conditions. With us it is given by the teacher of histology in a medical college. However, he is preparing a special course for the students. He uses the lantern in connection with his teaching—not exactly in the same way that Dr. Noyes has outlined, but to quite an extent.

We are endeavoring to follow along the lines suggested by Dr. Noyes as far as possible in the teaching of operative dentistry, applying the student's knowledge of histology to the practical preparation of enamel walls and margins.

The use of the lantern in the laboratory as Dr. Noyes has described, and in the lecture room as Dr. Smith has described, must appeal to every one of you as being very practicable, and being an adjunct that we cannot afford to dispense with, if we need any backing or authority. I might state that in the University of Minnesota there are to my certain knowledge, outside of the medical and dental colleges, eight lanterns in use; they are in biology, botany, mining and mineralogy, they are in chemistry, and they are in mechanics and physics—in fact, in almost all of the branches, excepting the purely classical. They are used by the teachers in all of the scientific departments, they are used and used to a great extent. Every lecture room is fitted, and some of the laboratories are fitted, so that we certainly can draw a lesson from that.

Dr. George W. Cook, of Chicago: It would be useless for me to attempt to add anything to what has already been said by Dr. Noyes. He is so well known as a teacher of histology that I could not possibly add much to a discussion of the subject. We should not lose sight of the fact that Dr. Noyes only uses the lantern as an adjunct to the regular laboratory work. The laboratory technic of histology is one of the best trainings that students get in technic work.

They learn considerable regarding manipulation in the histological laboratory. They learn a great deal in the hardening of tissues; they learn considerable about the use of certain agents. Dr. Noyes makes use of the lantern only as a supplement to his work, and, as we can all see, it is an important thing, because he brings out many points that the student who is not familiar with microscopy at all can see when it is placed before him with the lantern.

The subjects of histology and pathology are often neglected. I did not know until to-night that this was the first paper that had been presented on the subject of histology before this association. Now, to my mind, if we are going to teach histology or going to teach pathology, the technic of the work is just as important as the technic of some other departments in school work. The basic principle of the sciences of dentistry and medicine is histology. While we are studying the man in the grosser form; while we are studying the aggregate of cells, it is well also to study the cell in minutiæ. The principle underlying the profession of dentistry is that of scientific work. What has made the dentistry of to-day has been the work that has been done in and along scientific lines. There has been great skill brought out, of course, by the technic work, but the sciences, such as histology, pathology, physiology and bacteriology, are the fundamental principles underlying the whole fabric of the institution called dentistry. Unless a student is more or less familiar with the minute structure of the tissues and of the organization of the cell structure he will never make a first-class dentist. He can have no idea of what will result from the application of drugs. The body as a whole should be treated as a single cell; it is only a community of cells, and one cell having been disarranged in any way may disarrange many cells, and the result is that if he treats the human body in any particular way to bring it back into its normal condition, he must treat it as a single cell, because the study of the single cell is the basic principle upon which lie the rest of the conditions of which he has got to treat.

As I said a while ago, the study of the sciences has made the profession. I would like to ask how many men there are in the dental profession to-day who are scientific teachers—teachers of the sciences, such as histology and pathology? Very few, very few! How many dentists go out from the schools that have anything like a knowledge of the fundamental principles of physiology and of histology? Talk about treating the human body with all the drugs that there are in the pharmacopœia when you don't know the first principles of the cell—the mechanics of the cell structure itself and the use of the laboratory and the lantern and the microscope is the only way that you ever reach the scientific treatment of dental caries or any other pathological condition that comes to the dentist for treatment.

Dr. W. E. Walker: I enjoyed the paper and the lantern exhibit so thoroughly I can certainly congratulate the gentleman in succeeding with it as he has. The lantern is used at the University College of Medicine to a great extent, but we have never brought out its usefulness in the preparation of cavities as has been done here to-night. This has certainly been done magnificently. I am teaching in the college pathology, therapeutics and pharmacology, and therefore I thoroughly feel that I should emphasize what Dr. Cook has said on the subject of going back to the cell. Our students are taught physiology by medical professors, and histology likewise. The professor of histology tells me that he has more difficulty in getting the dental students interested in histology than is the case with the medical students, who, as a rule, he says, seem to grasp—more than the dental students do—the fact that they are bound to treat the tissues from the cellular standpoint, and while they have studied the histology in the first year, by the time they come to me in the senior year I find that if they ever did know much about histology they have forgotten it, and while I use the lantern slides with them on the screen to good advantage, still I find that I cannot get into their minds a really correct comprehension of what the tissue is, unless I go back with them myself to the histological laboratory, and they cannot comprehend the pathological problems unless they understand the cellular arrangement of the tissue and the fact that they *are* treating *cells only* and never treating tissues. When they treat a tissue they must treat it from the cellular standpoint. It is difficult to get them to *think* in *cellular language.* While the lantern is very useful, I think I can offer an illustration here that will make it clear, as Dr. Noyes has said to-night, that it will never be more than an adjunct to the tissues under the lens of the microscope—for instance, take a set of photographs which have been prepared to illustrate travels in some distant land; a man who has made the trip, and who is familiar with the land can enjoy these photographs and understand them; they will bring back to *his* mind the ideas that he had at the time he saw them. Present them, however, to one who has not *seen* those lands and how inadequate is his conception of what the man *did* see when he was there; so, having studied histology, lantern slides bring us back to our studies under the microscope, but to the student who has not studied with the microscope, it does not give him any more *idea* of what he has *not* seen than the photograph of the traveled land does to him who really did *not* see the object with his own eyes. Those who have tried to study foreign languages know how hard it is to think in the studied language; one is inclined to think in his own language, and so, unless the students have a thorough microscopic grounding in histology and go back to it from time to time, from year to year, they do not learn really to think in cellular language.

DR. MERRILL, of Birmingham, Ala.: I thank the essayist for the additional illustration that he has given for showing the student what interest histology is to dentistry, in his setting forth how the knowledge of the direction of the enamel prisms is of advantage in the preparation of the cavities. And I think that all along the line of our teaching we will find that it is important to let the student see where what we teach is going to be of advantage to him in his professional work in his life after he leaves the college.

Dr. N. S. Hoff: It seems to me that one advantage of the lantern is the same that we derive from any other method of illustration. It possesses the faculty in a peculiar and somewhat remarkable degree of attracting attention, and attention is one of the most essential features in teaching anything. Anything that will secure attention, anything that will concentrate, if you please, the attention of the class, as a picture on the wall will do, is of the very greatest value. I can very readily see how it would be of immense advantage to the teacher of operative dentistry in presenting such subjects as have been presented to us to-night, in the preparation of cavities, etc. To my mind, the lantern picture has not so much real advantage in teaching histology or bacteriology, for instance, as it has in teaching the subject to which our attention has been called this evening for the reason that looking at a lantern picture is like looking at a photographed picture. When you look at a picture on the screen taken from a microscopic slide, you get only one view of it; you do not have the opportunity of focusing the object as under the microscope, and you are never able to get the depth and the different views of the object as you would from looking through the microscopic section with the microscope, where you have the opportunity of adjusting it and getting the different views.

In teaching histology from the lantern view of the slide, while perhaps it does not distort the view, it enlarges it so greatly that it loses something of its value. A student perhaps cannot form any conception of the relative sizes of structures as exhibited by a lantern slide. He does not know how many times, for instance, that picture has been magnified. I don't know that that is a matter of great importance at any rate, as the matter of relationship is infinitely of more value, but of course we would like to know how big a thing is, or how little it is. Everyone wants to know this. We look at a tall building, or we look at a tall tree, we want to know how tall it is, and similarly if we see something very small we want to know how small it is. We like to weigh things in our minds. If we can get a mental conception of the comparative size of a thing we are able to mentally comprehend it. It is an advantage to see things in as nearly their normal sizes as possible and then to see them under known magnifications. In a lantern exhibit it is not always possible to explain definitely to a class what the difference in magnification may be, and it may be possible that in the teaching of the subject of histology the lantern slide may lose something of value or it may convey impressions that are not just what the teacher would like. If I were teaching the subject of operative dentistry by this method I would expect to have these same difficulties to contend with, but I can see that it is an appliance of very great value in teaching the subject to which it has been applied by the essayist. If I were teaching operative dentistry I should most certainly avail myself of this excellent method of illustrating this subject.

Dr. Henry W. Morgan, of Nashville, Tenn.: I arise for the purpose of complimenting the essayist of the evening on presenting this paper. I have witnessed many lantern exhibitions and have watched the progress of microscopic work under the hands of late Drs. Atkinson, Abbott, Heitzman, Whitman and Dr. Boedecker for many years, but never until this evening have I seen exhibited the practical application of microscopic work to operative dentistry clearly, forcibly, and in a manner that cannot be questioned, but must be accepted by all those who appreciate the difficulties we contend with in the management of the enamel margins.

It emphasizes to my mind one other point—that the teacher of dental histology in dental schools ought to be a dentist, who understands the practical application of microscopic work and histology to operative dentistry. I thank the doctor very heartily for the pleasure he has given me this evening.

A Member: Suppose you come down and tell us, we would rather have dentists in all these chairs.

Dr. Morgan: I believe I am prepared to say yes. The manner in which the doctor has explained the necessity for beveling the cavo surface angle have been beautifully illustrated, and I am satisfied that the association has been highly honored in the presentation of the paper, and I want to congratulate the association on having the first chance at it outside of Chicago.

I wish to state the reason we have not had a paper on histology before is, this association could not go beyond the technic of practical dentistry until last year.

Dr. G. V. Black: I will not take up time, only to say that this is a field of work I have been immediately interested in, especially how to cut enamel to the best advantage, and how so to shape enamel walls and cavo-surface angles that they will be sufficiently strong. These things have been exceedingly difficult in teaching operative dentistry, and this mode of teaching, I find from practical results, is a great benefit; shortens the work materially, and gives the students a very much more comprehensive idea of the subject. Indeed, they grasp it very much quicker and more perfectly than by any other method of teaching that I have seen. I think a great deal of it.

Dr. Noyes: I do not wish to detain you; it is late now; but I feel that perhaps there are others as well as Dr. Smith who would like to have something more in regard to the technic of lantern work. In the first place, in regard to handling the lantern, as an adjunct in lecturing. I very much, personally, prefer to handle the lantern myself. I think that the value of the lantern in class-room work is very largely lost if the lecture room is so arranged that it is necessary to use an assistant. It is impossible for any assistant, no matter how well he is familiar with the slides, or the presentation of the subject, to handle those slides in the way that the lecturer wants them exactly. Aside from that, the lecturer will want to go back to a slide. For instance, in a lecture, I will have a half-dozen slides, or less. My lecture goes on; I use the blackboard, and I use pantomime, or clay or anything else in illustration; I come to a point where I can use the lantern, and I simply throw up the switch, put in the slide and my picture is on the wall. I can use my lantern in a room in which the light is simply prevented from falling directly on the wall on which we are projecting. You see that in this room, with full electric light, I get practically a perfect projection. The lantern stands right beside my lecture table, and I can point out anything in the field, with a pencil at the slide, or I can step to the wall and point it out. When I am through with that illustration I go right along with my lecture; I can then turn to the blackboard or to the clay and use that as an illustration; so, as Dr. Smith has said, the lantern is valuable to the lecturer as an adjunct just in proportion as it is easily handled. Then as you go through your lecture, you want to come back to a certain slide, you know just where it is, you do not have to talk to an assistant, which would distract the attention of the whole class.

The lantern in our school we use in two different lecture rooms, and in two or three of our laboratories and class rooms. It is constantly used in my laboratory, and for that reason we have had rigged up this sort of a table, that we carry around anywhere in the building, and all that is necessary is to screw the plug into the electric light socket and throw in the switch and it is all connected. It stands in the pit in the lecture hall and projects at a distance of about thirteen or fourteen feet, giving a circle, or a square, of something like eight feet, which is plenty large enough to be seen throughout the room.

In the technic of preparing lantern slides, of course I need not go into the whole photographic problem of the preparation of lantern slides. It may be well to explain, in the enamel illustrations, the preparation of the cavity is made on a photograph of a microscopic section. First a picture is printed from that negative and then the cavity is prepared by cutting out with opaque on the negative, painting the opaque on the glass side. It can be painted on the film side, but it is easier on the glass side, and less danger to the negative, and changing the enamel preparation by the way the opaque is applied. You obtain, in that way, the same effect which you would if you had cut the cavity in the section before it had been ground, but if you had cut it in the section before it had been ground, it would be infinitely more difficult to prepare the sections.

In the use of diagrams, as you notice, the slide I first had on the wall was a diagram which was made by photographing a drawing. You recognize it, probably, as one of the old illustrations. It was made from the india-ink drawing. The drawing was photographed and we obtained a negative, and the lantern slide was printed from the negative in the usual way. Of course that gives the most accurate reproduction of a text-book illustration which we can get, but it requires time to get the negative and make the lantern slide.

With certain photographic tricks we can shorten that time greatly. I often prepare two or three illustrations from our text books in the evening before my lecture, but it takes considerable time—the whole evening, nearly. In reference to the suggestion of Dr. Smith, that is, tracing on thin paper, I have used that and discarded it. I have used, also, tracings on ground glass. I used that at first, but discarded that. You will find that you can get still better results by simply taking the clear glass and add sugar to your ink. If you add sugar to your ink it will stick to the glass and you can make a tracing directly upon the glass with the ink and have a perfectly clear projection. Another method is to use the clear glass and flow over it, then celloidin and let it dry. It will stick to the glass and give you a perfectly clear film. If you are too lazy to do that and are willing to waste the money, buy a dozen lantern slide plates, clear in the hypo, and dry the clear film, then upon that you can draw with water inks, not the insoluble India inks, but the water inks, in colors, as many colors as you may use, which dries in a few minutes. When you are through using it, wash the ink off and dry again, and it is ready for another time. You will find in tracing this way illustrations which you want to use, or diagrams which you want to make, you can do very quickly, very easily, and present them without taking the time to draw on the blackboard, and, in my experience, to very great advantage. If it is, however, an illustration from a text book which I want to reproduce as accurately and perfectly as possible, I photograph it and print it, and you can reproduce on the screen reproductions of illustrations from the text books as perfectly as they appear in the text. It requires just a little practice in the photographic technic. When I began two years ago I had never exposed a plate in my life, I had never seen a plate developed, and I want to say to you, to those of you who fear the photographic technic, it is not as difficult as you might believe, and it abundantly repays your effort.

In regard to the attachment of the microscope for projection, to this lantern, I had always supposed that in order to use direct projection it was absolutely necessary to possess the extremely expensive projection microscopes, which cost, I believe, $300 to $550. Well, it is not. The microscopic projection apparatus which I have, attaching to this lantern, cost only $10 altogether. It consists—I can show you in a moment how much time it takes to change it. You pick up your microscope from the table and turn it over at right angles and I have a board which is made with a socket to set my microscope on, so that when it is set in that socket and turned over it is centered; so that there is no time wasted in adjusting centers. All that is necessary is to put the slide on the stage with the microscope and project it. You can project with that perfectly simple apparatus with a two-thirds objective with perfect ease, and with a sixth objective, with a little greater care. I use occasionally a sixth, but I use chiefly the two-thirds objective. You get all the colors of the staining, all the perfections and imperfections of the microscopic slide, a very great help in connection with the photographs in laboratory work.

In regard to the application of the instruction to practice, it is in my opinion the salvation of the teacher of a theoretical subject in a dental school, the only thing which enables a man to hold the attention of a class on an abstract subject like histology or materia medica, is to make the students feel and keep them feeling that these abstract subjects are of every-day application in what they are going to do. Our work in histology is covered over in two years—general histology the first year, dental histology the second year—two complete years. Now I find every year men coming in will say: "I had both general and dental histology—I am all through histology, I don't want to take your histology." They are clamoring every year to get out of junior histology. But I find that about Christmas time I don't hear any more about it; they don't say any more about wanting to get out of junior histology. They have discovered, somehow or other, that that subject, which they considered as having nothing to do with the preparation of cavities and the filling of teeth, is really the thing which is of the very greatest importance. I tell my boys every year that the thing which has increased my rapidity of operation and my success of operation more than any one thing since I graduated has been the minute study of the structure of the enamel, and just in proportion as they study, in the operation, and before their operation, they will cut enamel easily and accurately and successfully, and before they get through they feel that, and as soon as they once feel it in regard to one thing in histology, they are willing to take your word a little bit that some of the other things which they did not see the application of really will have some application after a while. It is true of the anatomist. One of the most successful teachers of anatomy told me not long ago that the one way he was able to get men to work in anatomy was to show them at each lecture some place where a knowledge of anatomy had come in point in practice. And he made it a point of his study in every lecture before that class to bring out some case, either in his practice or some other, where his knowledge of anatomy had been of practical value to him as a practitioner. The same thing applies to histology knowledge and the teaching of that subject.

Now, in regard to one other point, I feel that the work on this subject has just begun. The application of it to the practice of dentistry has just begun. There are, as I might suggest now, a dozen different lines which have not been worked up, in which the structure is related to the practice, and those things are hungry for men over the country to become interested enough in them to work them out.

THE TRI-STATE MEETING.

Reported by Hart J. Goslee, D. D. S.

The third tri-ennial tri-State meeting of the Ohio, Michigan and Indiana associations, was held in Indianapolis, Tuesday, Wednesday and Thursday, June 4, 5 and 6, with an unprecedented attendance of over 750 dentists.

Credit for bringing off the most largely attended and generally successful meeting since the World's Columbian Dental Congress, is unquestionably due the committeemen who had charge of the meeting; and the fact that it was held in Indianapolis, an ideal city for such a function, and the home of good fellows and genial hospitality, had much to do with the success achieved.

More than to any other cause, however, must the success be attributed to the splendid executive ability of the local committee, headed by Geo. E. Hunt, in their efforts to prepare, arrange and carry out an entertainment program, the like of which has seldom if ever been equaled.

It seemed to the visiting contingent that neither labor nor expense had been spared by this committee in efforts to make the occasion an enjoyable one for all who attended, and a feature most appreciable, and one which should be more generally emulated at dental meetings, was the special arrangements for the entertainment of the visiting ladies.

This was simply ideal, and, indeed, the only possible criticism which could be made would be that the precedent thus established might spoil those who were so fortunate as to be present by causing them to expect this example to be followed at all subsequent dental functions. If it were, however, it would result in a mutual benefit to all.

The Chicago contingents in attendance at the meeting were forty-four strong, and the splendid program and social arrangements and the cordial hospitality accorded them, will cause Indianapolis and the officers of the joint meeting to always occupy a warm spot in the hearts of all, and those who did not attend—well, they certainly have a blank era in their lives.

The program of essays and clinics had been carefully selected and was carried out to the letter, and the usual delays in discussions was noticeably avoided, due to the selection and preparation of those who participated.

The meeting convened at 10:30 o'clock Tuesday morning, at the German House, with Geo. E. Hunt, presiding. Routine and executive business occupied this session.

In the afternoon, H. F. Harvey, of Cleveland, presided. The first paper was presented by W. H. Whitslar, of Cleveland, entitled, "Dental Neurasthenia." The paper, as might well be expected, was particularly good and evoked an enthusiastic discussion. The reference made to the manner of gaining exercise and rest, and its importance to the busy dentist, created considerable general discussion.

The paper of J. L. Young, of Detroit, entitled, "Some Considerations in Modern Bridge Work" followed. While there was much in the paper that was good, some of the "considerations" savored more of "ancient" bridge work than of "modern" procedures. The essayist who advocates open-face crowns and claims that in their use an opportunity is afforded for showing that "beautiful line of gold which our patients so dearly love," and who will advise the insertion of all gold anterior crowns when the shape of the tooth requires much distortion, is certainly not advocating either modern or artistic methods.

The discussion was opened by J. F. Stephan, of Cleveland, and continued by N. S. Hoff, C. V. Vignes and others in a lively fashion, and with somewhat pronounced diversity of opinion. At the evening session S. M. Fowler, of Battle Creek, Mich., presided, and F. J. Capon, of Toronto, read a paper on "Porcelain as an Art in Dental Work." The paper, while containing nothing especially new, was good, and must be commended, particularly for the strong plea made for the cultivation of the highest artistic tendencies in prosthetic work. The discussion was opened by J. E. Nyman of Chicago, and the writer, and between the essay and discussions but little was left unsaid regarding the advantages of porcelain work and the operative and manipulative procedure incident to its use.

At 8:30 Wednesday morning a very interesting clinic was given by Drs. J. O. Stillson and W. A. Heckard, of Indianapolis, on the continued administration of nitrous oxid. The clinic indicated that operations of a major nature may be made successfully under scientific nitrous oxid anesthesia.

This was immediately followed by a paper on "Continued Anesthesia with Nitrous Oxide Gas Under Definite Pressure," by

W. A. Heckard, of Indianapolis. The paper was supplemented with an exhibition of the apparatus designed for the purpose by the essayist, in the use of which the gas is sprayed into the mouth by means of metal nozzles which combine with the mouth prop, and allow ample room for surgical procedure under any degree of continued anesthesia.

The discussion was opened by O. N. Heise and continued by Cassidy, Hemminger, Butler, Logan, and Johnson, of Fort Wayne, in an interesting and animated manner; Dr. Butler commenting that a dentist had first brought out anesthesia, and one had also introduced its further scientific application.

Dr. C. N. Johnson then read a paper on "Critical Periods in the History of the Human Teeth." This proved one of the most interesting papers of the meeting, interesting to all who heard it, and eliciting much favorable comment. The discussion was opened by H. A. Smith and H. B. Tileston, and while it was scarcely possible for either to add much to the subject, both emphasized its important phases, and affirmed that it should be carefully read and studied.

The paper of C. M. Wright, of Cincinnati, on "Diseases of the Gums and Sockets of the Alveoli," was a most interesting one and will also bear reading and studying. The discussion on this paper was opened by J. E. Cravens and J. Taft, both of whom added much of a practical nature.

One of the most interesting features of the meeting was the lecture, illustrated with the stereopticon, by W. A. Price, of Cleveland. The doctor gave a most interesting talk on the application of the Roentgen ray in dentistry from a practical standpoint, of the results obtainable and how to interpret them, and of the necessary apparatus and how to use it; and supplemented this dissertation with an exhibition of slides showing the hidden abnormalities of nature, and the buried defects of unskillful and indifferent dental operations.

The work involved in their preparation, and the invaluable benefits derived by all from them could be scarcely appreciated.

Dr. Calvin S. Case's lecture on "Correction of Dento-Facial Deformities by Combined Prosthesis and Orthopedia," was highly interesting, and his work and the splendid illustrations accompanying it were much admired by all.

The results of the great work accomplished by Dr. Truman

W. Brophy were evidenced by his lecture on "Surgery of the Palate." This was amply illustrated with stereopticon views, showing every step of his operation for closure of cleft of the palate, and many details of surgical work of high character.

These three lectures, so beautifully illustrated, proved the crowning event of the meetings.

"A Study of Tooth Bleaching" was the title of a splendid paper by N. S. Hoff. The essayist confined his subject to the bleaching of teeth discolored from the application of medicinal agents. The result of the use of various therapeutic agents were clearly shown in sections of natural teeth especially prepared, and proved beyond conjecture how careful one should be in using any of them, and how many now in common use should be discarded entirely.

J. S. Cassidy, of Cincinnati, and J. P. Buckley, of Chicago, discussed the paper in a most interesting manner, and Dr. Buckley's remarks especially showed much familiarity with, and many splendid ideas upon, the subject in general from a chemical standpoint.

Dr. W. E. Griswold's paper on a "System of Retaining Springs for Saddle Plates and Removable Bridges" was read by the writer in the absence of the author. The paper presented Dr. Griswold's method of anchorage for removable bridges, which when indicated seem to possess a secure means of attachment and many advantages over stationary bridge work.

"The Human Face and Articulate Speech Divine" was the somewhat theological title of an essay by G. E. Johnson, of Ft. Wayne, Ind. The paper was splendidly written, the theme being built upon the theory of evolution and would have been interesting to most any class of biological or scientific students.

Grant Mollyneaux and C. S. Case opened the discussion in characteristic manner.

The clinics were held in the large amphitheatre of the German House on Wednesday afternoon and were largely attended. A partial list follows:

1. "CARVED SOLID CUSP FOR GOLD CROWN." J. E. NYMAN, CHICAGO, ILL.

The clinician demonstrated a very practical method of making solid cusps for shell crowns, which consisted of molding the cusp in modeling compound to conform to the opposing tooth, then securing mold in moldine and casting cusp of scrap gold. The results were good and artistic.

2. "A METHOD OF MOUNTING AND TRUING WHEELS FOR ENGINE AND LATHE." GEO. B. PERRY, CHICAGO, ILL.

The use of a diamond for the purpose of truing carborundum stones was demonstrated effectively and special emphasis was placed upon the necessity of having all stones run true and the ease with which this may be accomplished.

3. "PORCELAIN CROWN AND BRIDGE WORK." H. J. GOSLEE, CHICAGO, ILL.

Many specimens of porcelain crown and bridge work both in the metal construction and after completion with Close's, Consolidated and Brewster "bodies" were shown.

4. PORCELAIN INLAYS." F. J. CAPON, TORONTO, CANADA.

Many inlays in natural teeth were shown and the features of adaptation, retention and shading were especially demonstrated.

5. "BLOWPIPE CONSTRUCTION FOR COMPRESSED AIR, AND MODIFIED DAVIDSON SPRAY. C. E. ESTERLY, LAWRENCE, KAN.

The clinician exhibited a new blowpipe of merit designed for use with compressed air and nitrous oxide.

6. L. E. CUSTER, DAYTON, OHIO.

Dr. Custer exhibited his new electric furnace wherein the wires are brought outside of the fireclay and wound around projecting shoulders of it, instead of being partially submerged, with a view to securing greater heat.

7. "COMBINATION FILLING, AMALGAM AND GOLD, AT SAME SITTING." J. W. CLARK, LOUISVILLE, KY.

Several of these combination fillings were shown where the base was of amalgam and the occlusal one-half of gold, both inserted at the same sitting, by packing the latter directly into the former when plastic.

8. "SOME APPLIANCES USED IN ORTHODONTIA." W. E. GRANT, LOUISVILLE, KY.

Dr. Grant exhibited several regulating appliances mounted upon models showing the method of construction and application.

9. "ABUTMENT PIECE FOR BRIDGE WORK." J. P. CARMICHAEL, MILWAUKEE, WIS.

The clinician showed a method of constructing an attachment for bridge work, designed to fit the lingual surface of teeth. It is retained by cutting a groove into the tooth and adapting a plate of pure gold, burnished into the groove and afterward re-enforced with solder.

10. "EXTRACTING FORCEPS WITH REMOVABLE BEAKS, AND A NEW AMALGAM CARRIER." C. E. VIGNES, NEW ORLEANS, LA.

Exhibition of a forceps having removable beaks for convenience in sterilization.

The clinician also demonstrated a method of forming cusps in crown work without swaging, and the use of a new form of amalgam carrier.

11. "ADAPTABILITY OF A NEW FORM OF SCALERS." C. R. BUTLER, CLEVELAND, OHIO.

Scalers of new designs in form, presenting some very important advantages in adaptability and executions in all the varying positions in which their use is demanded.

12. "A SCIENTIFIC INSTRUMENT FOR MEASURING BULK CHANGES IN PLASTICS." GEO. E. HUNT, INDIANAPOLIS, IND.

Dr. Hunt exhibited an instrument of his own invention for accurately ascertaining the shrinkage and expansion of plastics.

13. "A LOWER DENTURE." R. C. BROPHY, CHICAGO, ILL.

Casting a lower denture using clinician's new alloy, for the purpose which affords the advantage of a bright white color in contrast to the tin like appearance of other alloys used for heavy lower plates. The clinic also demonstrated the advantages of using his Imperial investment compound for plastic metal work because of its nonshrinking quality under heat.

14. "RICHMOND CROWNS WITH SOLDERED FILLINGS." H. A. MOYER, KENDALLVILLE, IND.

A cavity of suitable size is ground into the facing in a desired location, into which the backing is burnished, the contour of the filling then made with solder when assembling the parts.

15. "PRACTICAL IDEAS IN CROWN AND BRIDGE WORK." W. O. VALLETTE, GOSHEN, IND.

The clinician demonstrated the construction of a gold crown for teeth having live pulps and where little grinding is done in the preparation. The cusp is reinforced by a duplicate cusp fitted inside of the original which leaves depression to accommodate the natural cusps. Also the use of rubber teeth for bridge work by building a gold jacket around them.

16. USE OF SPECIAL PLUGGERS (KNOWLES, SAN FRANCISCO) IN MATRIX WORK AND ONE KIND OF MATRIX." H. P. CARLTON, SAN FRANCISCO, CAL.

Demonstrating manipulation of matrix, and a set of pluggers designed by Dr. Knowles, of San Francisco, especially for matrix work. Clinician also exhibited a new hot air syringe.

17. "THE REMOVAL OF EXCESS CEMENTS IN SETTING CROWNS." S. D. RUGGLES, PORTSMOUTH, OHIO.

By coating outer surface of band with vaseline excess of cement may easily be removed after crystallization has taken place as the cement will not adhere to an oiled surface.

18. "FLOSS TOOTHPICKS." J. W. COWAN, GENESEO, N. Y.

Dr. Cowan exhibited a very ingenious floss holder designed by himself. It consists of a frame about the size and shape of an ordinary pocketknife, which contains small vials of antiseptic floss and an arm to which the floss is attached when in operative position.

19. "CONTOURING PLIERS." D. MILLER, CHICAGO, ILL.

A new form of pliers with interchangeable convex and concave rotary points, designed for contouring gold crowns.

20. "USE OF MATRIX AND PAD." F. W. STEPHAN, CHICAGO, ILL.

Matrix used may be made of any soft sheet metal. The pad is made of gold foil, or tin and gold foils folded to any desired thickness. The pad is cut a little larger than matrix, and is then laid over its inner surface, the slight surplus being turned over the edge to be carried to the gingival margin. In this form the matrix and pad are carried to place and wedged firmly.

The pad is now cut away along the buccal and lingual margins of the cavity, and that portion of it within the cavity is laid over against the cervical wall and condensed to form first layer of the filling. Using pad with matrix presents three advantages: 1st. It does away with liability of injuring the margins of the cavity. 2d. It holds the matrix away from the margin enough to overcome the sharp angle which otherwise would exist between matrix and tooth. 3d. By laying the pad over into the cavity to form the first layer of the filling the cervical margin is positively covered and easily condensed.

21. "SWAGED PLATE, PARKER'S SYSTEM." B. H. LEE, GRAND RAPIDS, MICH.

The shot system of swaging, generally known as an effective and valuable system, and especially useful in partial cases and where a considerable undercut exists.

22. EXHIBITION OF DR. BECK'S INSTRUMENT FOR ADJUSTING GOLD CROWNS. GEO. N. WEST, CHICAGO, ILL.

An instrument by the use of which the band may be perfectly adapted to the root at all points. Also very useful in removing crowns.

23. "SWAGING APPARATUS." EMANUEL OTTISEN, CHICAGO, ILL.

The clinician exhibited an extensive and complete apparatus for swaging, and many ingenious ideas and methods in connection with swaging plates for rubber attachments.

24. "DEMONSTRATION OF VERNON'S GOLD AND HAND PRESSURE INSTRUMENTS." J. B. VERNON, ST. LOUIS, MO.

Gold prepared by a special process which affords the advantages of perfect condensation under hand pressure because of peculiar plasticity, adhesions to walls, spreading property under plugger and non-balling or rolling up. It is not a crystal gold but when condensed assumes nearly the density of bullion, having within one-tenth of one degree the specific gravity of bullion.

25. "TIN AND GOLD FOIL." ISAAC DOUGLASS, ROMEO, MICH.

A demonstration of employing gold and tin in same cavity. Clinician also demonstrated root canal filling with gold.

26. J. R. CALLAHAN, CINCINNATI, OHIO.

Dr. Callahan exhibited a dermoid cyst containing seven well developed teeth, three of which had typical and extensive caries.

Being the only case on record where decayed teeth were found in such a cyst, and the decay being so pronounced, the clinic was of more than remarkable interest.

27. "ATTACHMENTS FOR REMOVABLE BRIDGE WORK." W. E. GRISWOLD, DENVER, COL.

Many models showing the application of Dr. Griswold's attachments for saddle plates and removable bridges were shown by Dr. L. S. Gilbert, of Denver.

This proved one of the most interesting clinics of the meeting.

THE PROPER SELECTION OF CROWNS.

In a recent issue of the REVIEW one of our eminent brother practitioners makes the statement that "Every one of us in the profession has his hobby or ideal." This statement is unfortunately true to a greater or lesser extent, probably more so in dentistry than in any other profession, and this fact no doubt causes more failures than any other one thing. It is the versatile man that makes the greatest success to-day, and the successful practitioner must be a specialist, not in one thing but in many.

This is more true of prosthetic dentistry, and especially of crowns, than of any other branch of dentistry.

This man uses a plain Logan, that one a banded Logan or a porcelain faced crown, and another a baked porcelain, and so on, but each one of them has its place and what that place is should be understood by every dentist.

No all porcelain crown should be used where the space from incisal to gingival is less than five to seven millimeters. For any shorter bite the porcelain or Richmond should be used with the incisal edge well covered with gold. There is practically no limit to the use of the Richmond crown, but for esthetic reasons, the baked porcelain stands preëminently over all. The plea is frequently made that all dentists are not properly equipped to make them, but in this day and age, with all the styles of furnaces on the market, there is no excuse for this, and the crown can be made as quickly and easily as any other, and the superior results obtained are so greatly appreciated by both patient and operator that every effort should be made by every one in the profession to master this branch of dental art.

It is now conceded by the majority of dentists that no crown should be used without a band, and this has led to the invention of many kinds of crowns with removable porcelain facings and crowns, many of which have merit. But if good teeth are used, Justi's especially, and the investment properly heated, there is little chance of checking the porcelain. The banded Logan is a good crown where the roots are large and strong, but where the roots are thin and weak, as is frequently the case in lateral incisors, the pin is so large, that when the roots are properly prepared to receive it, they are so weak that they are liable to split.

So let us bear in mind the fact that every crown has its limitations, and in making our choice, select the one that meets the requirements of the case, and act accordingly. R. ALLEN GRIFFITH, D. D. S.

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EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

NATIONAL DENTAL ASSOCIATION.

All of the chairmen of sections are at work to make this a notable meeting. It will take place the first Tuesday in August at Milwaukee. A large section of the country has been drawn upon to get new members, and the city offers the visitors many attractions. This meeting will be of great benefit to Wisconsin and the whole Northwest. The State meetings of Minnesota and Wisconsin will precede that of the National by a few days, and any one desirous of taking in all of them in a holiday jaunt can do so. A large attendance is confidently expected, and visitors will be well cared for.

THE STATE MEETINGS.

From the reports of the various State meetings this year all were well attended, much enthusiasm being shown at the new things reported and the great variety of the clinics. The demonstrations and clinics at the Illinois meeting and the Nebraska meeting were a revelation to most of the onlookers, as it was thought that clinics were beginning to grow somewhat threadbare. On the contrary, such was the excellencies presented that the rooms were crowded all the time. The dentist is an inventive genius. As new problems come up to be settled, he is always ready to bridge the chasm of the past with something to fit the present. New methods of working porcelain and new methods of bleaching teeth and new styles of bridge work and better methods of fitting plates and arranging teeth are coming out all the time. It is an absolute necessity to stir around to see all the new devices and methods of utilizing them. This is a progressive age and we are only beginning the century. Great credit is due to the industrious and versatile, well-trained hand and cultured mind of the newer crop of recent graduate dentists. Everything is being utilized to better the work and perfect it for mankind. Things that were once new are not now, and in their place all that energy and research can do is being done. We offer our congratulations to the earnest student and indefatigable worker.

THE UNUSUAL METHOD.

To supply a tooth to fill a gap caused by the nonappearance of the orthodox tooth means implantation of a tooth or the adjustment of a bridge. The lateral incisor failed to appear, the cuspid moved over to the central and the space between the first bicuspid and the cuspid was wide enough to take another cuspid. The artificial socket was made and a good strong cuspid was implanted twelve months ago. It is perfectly firm, looks well and is useful.

The method for treating teeth for implantation is as follows: Make a ten per cent solution of boro-glycerin in distilled water; to one ounce of this solution add one-half drachm of melted carbolic acid, drop the tooth into this solution and wait until the case appears for implantation. When you are ready to implant take the tooth in absorbent cotton moistened with boro-glycerin ten per cent and scrape off the pericementum until the root is clean; open the apical end of the root and fill it with gutta-percha, drop the tooth back into the first solution, wash the new socket with a bichloride solution $\frac{1}{1000}$ slightly acidulated with hydrochloric acid three drops to the oz. Have this hot, about 110 degrees F., force the tooth into the socket and adjust a splint to the teeth on each side of the implanted tooth, made of German silver and well cemented. Leave the splint in place for two months and have the patient use a wash several times daily, composed of boracic acid dissolved in equal parts of cassia and peppermint water. By adding one drachm of chloroform water (officinal) to the pint this becomes quite agreeable. These teeth have a good color when treated as above indicated.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of The Dental Review:

Dear Sir: The New York Institute of Stomatology held its meeting for the month of May at the office of Dr. J. Adams Bishop, 30 West 48th street, Tuesday, May 7.

After the usual half hour for the presentation of incidents of office practice, etc., Dr. Geo. Franklin Eames of Boston read a paper entitled "A Few Remarks on the *Treatment* of Certain Oral Expressions Commonly Designated as Pyorrhoea Alveolaris."

This paper was quite exhaustive, and while it did not present any radical change from the usual methods of practice, certain special features of Dr. Eames' methods were clearly presented.

Dr. E. C. Briggs of Boston was expected to take a prominent part in the discussion, but at the last moment he was unable to come. Nevertheless, there was no lack of speakers, and the different views of several were prominently expressed. Nothing new or startling was brought out, however, and so far as we observe all recent discussions of this subject in this and other societies emphasize the fact that we do *not* know what pyorrhoea really is.

In May the "pros" seem to have the floor. In June the "cons" seek for the ascendancy, as will be shown hereafter.

The annual meeting of the New York State Dental Society having occurred, all the "District Dental Societies" are closed until fall; consequently we can give you nothing from either the "First District Dental Society" (Manhattan), nor the "Second" (Brooklyn). New Jersey's locals are also resting, preparatory to the annual of the New Jersey State Dental at Asbury Park on the third Wednesday in July. We understand that they are striving to eclipse all previous efforts this year in the *quality* of what they will present for the mind in essays and clinics and the *quantity* of the exhibits.

The June meeting of the "Institute of Stomatology" occurred Tuesday evening, the 4th, at the office of Dr. E. Howard Babcock, No. 140 Remsen street, Brooklyn. As has so frequently been the case when the meetings were held in Brooklyn, the attendance was not as large as usual, but was composed of the thoughtful men who are regular in their attendance.

Dr. Chas. Otis Kimball presented a biographical sketch of the late Dr. E. J. Dunning, who was so well known to a large number present.

Some matters of interest concerning office practice were referred to by one or two, and then the essayist of the evening, Dr. D. D. Smith, of Philadelphia, was introduced.

He spoke upon some important phases of "Oral Prophylaxis," laying great stress upon the absolute necessity for frequent cleansing of the teeth by the dentist—as frequent as once a month, or oftener. Described in detail his manner of removing tartar and polishing the teeth, using powdered pumice only until as near thoroughness was reached in the way of cleanliness as possible. Emphasized the fact that he does all such cleansing by hand—the touch being invaluable in determining when the proper point is reached. He was emphatic in his belief that such frequent cleanings would prevent, if not cure, pyorrhoea—and does not agree that pyorrhoea is of an uric acid origin.

Upon adjournment, as is usual with this society, Dr. Babcock invited the society to a collation in his dining-room.

Dr. Smith gave the impression of seriousness in reference to his subject, but he also left the impression of egotism which is rarely excused by an audience.

To analyze his paper further it might also be remarked that some inconsistencies appear. He assails Dr. Wedelstaedt rather fiercely for grossly insulting the dental profession. Several gentlemen presumed to discuss his paper, but the doctor seemed so insecure that he flatly refused to deal with "that part of the paper this evening."

Part of his programme was quite unusual. Two patients from his practice had accompanied him from Philadelphia, and their mouths were exhibited to show the good results of such persistent work upon the teeth.

We note that all the journals have excellent portraits of Dr. McKellops, though we think the best one appeared in the REVIEW.

The New York Odontological Society will hold a memoriam meeting for Dr. McKellops Wednesday evening, June 12, to which we note that *all* the dental societies in New York, Brooklyn and New Jersey have been invited *except* the "Institute of Stomatology."

The Odontological Society met in the Academy of Medicine on Tuesday, May 22, 1901. One of the first matters of business touched upon was Dr. McKellops' death. A special meeting is to be called, the announcement for which has just come by post. The meeting is for Wednesday next, June 12, too late to be incorporated in this letter.

It was announced that Dr. Miller of Berlin is to visit our shores this month, and a committee was appointed to receive and welcome him.

The society also expressed a desire to assist Dr. Donally of Washington (who has been so active in the "Dentists in the Army" problem) to the appointment he should have.

The paper of the evening was finally reached: "The Constitutional Origin of Dental Caries," by Eben M. Flagg.

The essayist many years ago established an enviable reputation in the States, but relinquished his practice here to take up practice in South America. He is now practicing in Philadelphia again.

A synopsis of Dr. Flagg's paper, containing some of his conclusions, are:

1st. The accepted doctrines in relation to the cause or causes of dental caries do not fully account for the phenomena presented by the disease.

2d. There is reason to believe that the disease proceeds from within, outward. That is to say, it is of the nature of an eruptive disease.

3d. The operations as generally taught for the cure of this disease do not eradicate it.

4th. There is reason to believe that the disease is contagious and must be so recognized before any permanent progress can be made toward its radical cure.

5th. It is the duty of the dental profession by every means within its power to call the attention of boards of health, government physicians, army and navy surgeons and medical advisers in general to the great injury which this disease is inflicting on the public, in order that a united effort may be made to eradicate it or at least to reduce its ravages to a minimum.

Dr. Flagg said that we have no cause for congratulation in reference to our progress in arresting dental caries. The mere filling of teeth, he pointed out, does not immune them from caries. Periods of immunity he believes are due to constitutional causes, just as immunity from some diseases. He likened caries of teeth to a running sore.

The doctor cited the case of a school girl who suddenly became affected by dental caries; her case was cured and the caries arrested by getting her to discontinue some of her studies and live in the open air, etc.

Dr. Rhein, in discussing the subject, said that generally dentists' children suffered much from overindulgence and leniency, and that their teeth were liable to suffer from such treatment.

Dr. Jarvie denied that Dr. Flagg had convinced him. As to contagion. He asked: "Why do not dentists, who stand over dental caries all their lives, not show more inclination to affection?"

Dr. Hill felt rather discouraged that those at dental society meetings should not be positive in their remarks, rather than say: "I think this is so,—I have an idea that is the case," etc. Why don't men get up and say, "I know this and I know that is the case?"

Dr. Rhein felt that Dr. Hill's remarks were directed toward him, so he hastened to say that "his modesty Dr. Hill leads me to discuss the subject so." Modesty says Hill! Lord deliver us.

Yours truly, "THE BOROUGHS."

REVIEWS AND ABSTRACTS.

THE AMERICAN TEXT-BOOK OF OPERATIVE DENTISTRY in Contributions by Eminent Authorities. Edited by EDWARD C. KIRK, D. D. S., Professor of Clinical Dentistry, University of Pennsylvania. Second Edition. 897 Illustrations. Cloth $6. Published by Lea Brothers & Co., Philadelphia and New York. 1900. Pp. 852.

The second edition of this excellent work is much improved by additions and some alterations of more recent developments in operative dentistry. New illustrations are also very helpful to the student, old or young.

This method of compilation seems to be a very happy one; the chapters are each treated by authors who have especial regard for their subjects, in this way producing a work that is concise, up to date, and of far greater strength, variety and general interest than could possibly come from the pen of any one man. The contributors are all teachers of considerable reputation, hence this work gives standard methods of operative procedure which makes it an admirable text-book for advanced tudents and valuable reference volume for practitioners. The ditor has made a careful arrangement of his chapters and ffected a continuity that is very pleasing. The practitioner who has not been able to work along those lines will find a most nteresting study in Dr. F. B. Noyes' chapter on Dental His- ology, explaining both to eye and mind the various dental for- nations, their development and variations. Here will be found he causes for some failures, operations, and the remedies uggested in a more scientific adaptation of proper methods to he tooth structures. Among other subjects of more recent nterest is that of porcelain inlays. This work exactly performed and conservatively placed is a great boon to both patient and practitioner and is probably destined to occupy greater attention n the future. There are many other special points as regards cavity preparations, manipulation of filling materials, pathological and maldeveloped conditions which are added to the former backbone of the book. Altogether this text-book is first-class in the matter combined as well as being a model of the printer's art, and should be in every dentist's library. M.

MEMORANDA.

Dr. L. S. Harris, of Denver, Col., visited Chicago in June.

Dr. R. L. Cochran, of Burlington, Iowa, visited Chicago in June.

Dr. H. M. Reid, of Minneapolis, Minn., was in Chicago in June.

Dr. L. S. Gilbert, of Denver, paid a flying visit to Chicago in June.

More than forty Chicago dentists went to the Indianapolis meeting.

New Jersey State Dental Society will meet at Asbury Park July 17, 18, 19.

Minnesota State Dental Society will meet at Duluth July 30, 31 and August 1.

The National Association of Dental Examiners will meet in Milwaukee August 2.

The library of the late Dr. H. J. B. McKellops, is to be sold for the benefit of his surviving family.

The May meeting of the Chicago Dental Society was a record breaker for an ordinary meeting, 240 or more being present.

June is the month to think of vacations. The woods, lakes, rivers—all attract; the mountains and the seaside are always attractive.

A marble bust of the late Dr. Geo. W. Keeley was unveiled in the Ohio College of Dental Surgery May 9, by the Alumni Association.

Some of our readers insist that a well conducted memoranda department is most attractive. The trouble is to find just what will be useful and new.

The one thing noticed at the Nebraska meeting was that the clinics were watched with great eagerness, and all the new things were done well and they were thoroughly understood.

One of our correspondents has suggested that we have a diminutive Sousa's band present at all tooth pulling operations! This in view of musical phonographs now used in Paris.

Did you ever try spirits of camphor for inflammation of the gums around the necks of the teeth? Of course we use other remedies, but a house prescriber said that, after setting a crown, it was most effective.

Dr. Florestoa Aguilar, of Madrid, has been decorated with the Cross of the Legion of Honor by the French government. Dr. Aguilar was the head of the Spanish Commission at the Dental Congress as well as the government representative.

A second and revised edition of Dr. Bell's work on "Our Teeth" has been issued but the reviewer says that "the second book is no different in substance from the first. I see nothing in the second book to make me change my opinion already published." C. E. B.

A dentist was fined $225 in Sidney, N. S. Wales, for trying to remove a plate from the mouth of a patient when she declined to pay for fastening one of the teeth to the plate. A leg, an arm, an eye or tooth is a part of the person after once being fastened to the body of the carrier.

The Maryland State Dental Association and the District of Columbia Dental Society held a joint session in Baltimore which was well attended. More than forty clinics were given. Dr. Robert Good, of Chicago, and Dr. W. E. Griswold, of Denver, gave clinics.

The fourth annual meeting of the G. V. Black Dental Club, of St. Paul, was held May 17, 1901, and the following officers were elected: G. F. Andrews, president; Scipio Bond, vice president; J. M. Walls, secretary and treasurer; E. K. Wedelstaedt, J. E. Weirick and W. N. Murray, board of censors.

J. M. WALLS,
Secretary.

BLEACHING.

I find that the easiest way to use peroxide of sodium in bleaching is as follows: After the cavity is cleaned and *dried*, wet it carefully with distilled, *boiled* water and then with a white pine stick whittled to a long, slender point, flat sided; carry the dry powder into the cavity slowly and watch the result.

Keep on feeding the cavity until the interior begins to be frothy. Keep this up until the tooth is bleached. (This will take about thirty minutes.) Fill the cavity, after washing carefully with carbonate of soda water 1 to 100, and then pack it with precipitated calcium phosphate (Bulkely) until the whole interior is well lined with it, using distilled water to make a paste. Afterward fill with any kind of cement two or three shades whiter than the tooth and cover the filling with gold.

TWO STYPTIC AGENTS—DR. WUCUORHE, BERLIN, ODONTOLOGISCHE BLÄTTER.

In case of severe and prolonged hemorrhage after extractions, incisions, etc., especially in hemophilia, I would like to draw special attention to extractum hydrastis fluidum canad., 25 to 30 drops every hour, the second dose usually being sufficient to stop profuse bleeding.

℞. Extr. fluid. hydrast. canad, 15.0.
Q. S.—30 drops every hour.

For many years it has been my habit to keep a small quantity on hand, if necessary administering the first dose myself.

For local treatment I would highly recommend penghawar yambi or penghawar yambee or penghawar djambi. P. y. are the hair-like scales which are found on the stems of several ferns. The principal plant is cibotium baromez s. sm. The stem of the fern (native to the Sunda Islands, India, and Southern China) is closely covered with gold-yellow hair three c. m. long. This fern hair extracts the moisture from the blood eagerly, and causes coagulation of the serum, thus quickly clogging up the open ends of bleeding vessels. Before placing a pellet of the fern hair in a wound it is best to crush and crumble the hair so as to bring as many as possible of the thin walled tubuli of the hair in contact with the blood. A prop of penghawar yambi stops bleeding remarkably quick, and is preferable to ferrum res. sol., inasmuch as wounds will heal rapidly and without suppuration. A local application of penghawar yambi usually suffices in profuse hemorrhages.

ALUMINUM PLATE NOT COMPATIBLE WITH GOLD FILLING.

The patient had lost all of the teeth in the upper jaw except the central incisors; one of these contained a large gold filling. She had been wearing a partial rubber plate, and the mucous membrane under the plate was in a highly inflamed condition. An aluminum plate was put in the month. The patient complained of a salty taste and a profuse flow of saliva, which made it impossible to wear the plate, a gold plate was beyond her means, so she had to be content with a rubber plate. JOHN G. HARPER.

St. Louis.

SOAPSTONE.

Pulverized soapstone has several uses in the dental office. Have a quantity of the powder in a wide-mouthed bottle on the operating case, a little rubbed on the dam where the holes are punched will make the application easy. The powder applied to the surface of cement fillings prevents its sticking to the instruments. In the laboratory a pepper box of the powder from which to sprinkle the powder onto plaster of paris, after the plaster in the lower part of the flask has hardened sufficiently to handle, makes a good separating medium. The powder sprinkled into the shoes, if a little tight, makes them feel a size larger. JOHN G. HARPER.

St. Louis.

NATIONAL DENTAL ASSOCIATION.

The fourth annual meeting of the National Dental Association will be held in Milwaukee, Wis., commencing Tuesday, August 6, continuing four days. The Masonic Temple hall, which is conveniently located and especially suited to the various needs of the association has been secured.

Special railroad rates are being secured and will be announced later.

All regularly organized dental associations are entitled to one delegate for each ten members, and these associations are urged to send full delegations.

Dr. G. V. I. Brown, of Milwaukee, chairman of local committee, will engage rooms at the hotels and answer questions regarding local arrangements.

G. V. BLACK, *President.*
J. D. PATTERSON, *Chair. Ex. Com.*
A. H. PECK, *Secretary.*

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The nineteenth annual session of the National Association of Dental Examiners will be held at the Plankinton Hotel, Milwaukee, Wis., beginning Friday, August 2, at 10 A. M., and continuing in session until adjournment. The hotel rates will be American plan—without bath $2.50 to $4.50 per day, with bath $3.50 to $5.00 per day. A fare of one and one-third has been arranged for on the Lehigh Valley Railroad, good from July 31 to August 10 inclusive, $26.07 for the round trip. Trains leave New York at 8 A. M., 10 P. M., and 12 noon; leave Philadelphia at 9:00 A. M. 10:30 A. M., and 12:30 noon, connecting at South Bethlehem with main line, arriving at Buffalo at 9:20 P. M., 9:35 P. M., and 9:55 P. M., in time for connection with Chicago express, leaving at 10 P. M., arrive at Chicago next day at 1:28, leave Chicago at 3 P. M. and arrive at Milwaukee 5 P. M. Buy single through ticket and take agent's receipt. CHAS. A. MEEKER, D. D. S., *Secretary.*

ILLINOIS STATE DENTAL SOCIETY.

Following is a list of officers and committees elected for the ensuing year at the last annual meeting of the Illinois State Dental Society: President, M. L. Hanaford, Rockford; Vice President, J. E. Hinkins, Chicago; Secretary, A. H. Peck, 92 State Street, Chicago; Treasurer, C. N. Johnson, Chicago; Librarian, J. T. Cummins, Metropolis City. Members of Executive Council: J. R. Rayburn, Fairbury; W. E. Holland, Jerseyville; J. G. Reid, Chicago. Executive Committee: J. W. Cormany, Mt. Carroll. Publication Committee: A. H. Peck, Chicago; C. N. Johnson, Chicago; Edmund Noyes, Chicago. Board of Examiners: Edmund Noyes, Chicago, to succeed C. M. Robbins, term expired. Committee on Dental Science and Literature: G. V. Black, Chicago. Committee on Dental Art and Invention: H. J. Goslee, Chicago. Committee on Infraction of Code of Ethics: T. L. Gilmer, Chicago; A. S. Waltz, Decatur; O. L. Frazee, Springfield. Supervisor of Clinics: D. M. Gallie, Chicago. Committee on Local Arrangements: O. L. Frazee, Chairman, Springfield; Assistants: E. F. Hazell, Springfield; T. P. Donelan, Springfield.

RECENT PATENTS OF INTEREST TO DENTISTS.

671,929. Rubber dam for dentists, Cornelius F. Horgan, Philadelphia, Pa.

672,392. Fountain spittoon, John C. Blair, Louisville, Ky.

672,163. Removable denture, Alonzo C. Caldwell, St. Paul, Minn.

673,019. Support for artificial dentures, Virgil W. Gilbert, assignor to S. S. White Dental Mfg. Co., Philadelphia, Pa.

672,920. Dental plugger, Harry Shoemaker, assignor to G. P. Gehring, Philadelphia, Pa.

673,802. Dentistry, Daniel P. Tanco, Kingston, Jamaica.

TRADE-MARKS.

36,233. Dental burs, Consolidated Dental Mfg. Co., New York, N. Y.

36,209. Dentfrices, tooth powders, tooth washes and tooth paste, Charles G. Pease, New York, N. Y.

36,210. Dentifrices, tooth powders, tooth washes and tooth paste, Charles G. Pease, New York, N. Y.

36,262. Dentifrices, tooth powders, tooth washes and tooth paste, Charles G. Pease, New York, N. Y.

LABELS.

8,297. Tooth paste, "Creme Dentozone" Irwin M. Adams, New York, N. Y.

8,341. For Dental Tablets, "Anti-Decay" Charles W. Howard, Watertown, N. Y.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

1022 14th street,
WASHINGTON, D. C., March 25, 1901.

With no other apology than that the subject is important, we beg to again call your attention to the Dental Section of the Army Medical Museum and Library. The effort made to represent here the attainments of dentistry proved an aid in securing the recent legislation creating a dental corps for the United States army. But now that the dental corps is being organized may we not expect a more general recognition of the duty of every member of the dental profession to contribute to the scientific value of this great institution—our national depository? All current dental literature and some museum material have been provided for at government expense, but a museum cannot be built up by purchases alone. The profession must contribute most of the specimens necessary to illustrate the art of dentistry and supply the data on which the advancement of its science depends.

Our efforts heretofore have failed to secure illustrations of the methods of treating fractures, sections, wounds, etc., of the jaws and bones of the face—there is now more especial need of models, photographs, drawings, and appliances to illustrate dental methods in this class of cases.

Yours fraternally,
WILLIAMS DONNALLY,
HENRY W. MORGAN,
JOHN S. MASHALL,
Committee on Museum and Library
National Dental Association.

H. J. M'KELLOPS, D. D. S. MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.

The resolutions below were adopted by the Mississippi Valley Association of Dental Surgery, the oldest dental society in the world, of which Dr. McKellops was a faithful and earnest member.

WHEREAS, In the providence of the great Creator of the Universe he has been pleased to remove from earth's trials and sorrows, our beloved friend and co-laborer, Dr. H. J. McKellops, who for many long years has been a devoted worker in the interest of his profession and for the benefit of mankind. He was a constant attendant at the different associations of the profession, especially at the meeting of the Mississippi Valley Association, where his generous features beamed with delight and enthusiasm as he met his friends of years agone. He always brought with him to these meetings something of interest, either in mode of procedure or some valuable appliance, and always took part in the deliberation of its members. He was always free in his manners, having no secrets to himself, and liberally assisting those who came to him for aid.

In his demise the profession has been deprived of a devoted laborer in the vineyard, and one who never shirked a duty assigned him.

Therefore be it Resolved, That we cherish in memory the many virtues of our friend, feeling that our loss is his gain, and we may never meet his like on earth again. May his example cheer and inspire us along the pathway of life till the dark future lets its curtain down, and we are swallowed up by eternity.

Resolved, That although he is forever gone from us, we may benefit by what he has done in his love for the profession, and his sincere attachment to his friends.

Resolved, That we commend his spirit to Him who gave it, and that we may in the future commune with it, freed from the dross of life, and purified by the troubles through which it has passed.

Resolved, That the secretary be instructed to extend our sincerest sympathy and condolence to the family in this their great bereavement, and that a copy of these resolutions be sent to them and to the editors of the different dental journals of the country.

E. G. BETTY,
J. TAFT,
WM. TAFT,
D. W. CLANCY,
H. A. SMITH,
H. T. SMITH,
C. M. WRIGHT,
R. J. PORRE,
Committee

The Missouri State Dental Association will hold its thirty-seventh annual session at Sedalia July 9, 10, 11, 12. A cordial invitation is extended to all reputable dentists to be present and participate in the proceedings.

Hotel and railroad rates have been secured.

The following is a partial list of essayists and clinicians.

ESSAYS.

1. Dr. F. F. Fletcher, St. Louis: President's address
2. Dr. Truman W. Brophy, Chicago: Surgical treatment of cleft palate illustrated with stereopticon.
3. Dr. W. V-B. Ames, Chicago: Utilization of atmospheric pressure with and without air chambers.
4. Dr. Austin C. Hewett, Chicago: Proof of the value of analgesics and anesthetics in dental office.
5. Dr. L. W. Nevius, Chicago: The generation and administration of nitrous oxide gas.
6. Dr. E. Bergstresser, Abilene, Kan.: Science and imagination.
7. Dr. C. D. Lukens, St. Louis: Orthodontia—illustrated by lantern.
8. Dr. M. D. Hamisfar, Warrenburg: Diagnosis from a microscopic or biological standpoint.
9. Dr. Walter M. Bartlett, St. Louis: Our State law.
10. Dr. W. L. Reed, Mexico: Immediate and bloodless removal of the pulp.
11. Dr. B. L. Thorpe, St. Louis: The painless separation of teeth.
12. Dr. J. W Hull, Kansas City: Dentistry as a fine art.
13. Dr. A. Tschirner, St. Louis: Detrimental effects of soluble organic substances in dental cements.
14. Dr. M. C. Marshall, St. Louis: Some clinical experiences in pyorrhoea.
15. Dr. Geo. H. Gibson, St. Louis: Oral hygiene.
16. Dr. H. E. Zorn, De Soto: Habit.
17. Dr. S. T. Bassett, St. Louis: Porcelain work.
18. Dr. Oscar Hammer, St. Louis: Treatment of pulpless teeth.
19. Dr. T. W. Arnold, Butler: Subject to be announced.

CLINICS. DR. WM. CONRAD, ST. LOUIS, SUPERVISOR.

1. Dr. W. V-B. Ames, Chicago: (*a*) The utilization of atmospheric pressure, with and without air chambers; (*b*) cement clinic.
2. Dr. D. O. M. LeCron, St. Louis: (*a*) The Peck method of porcelain inlays; (*b*) porcelain crown and bridge work.
3. Dr. E. Bergstresser, Abilene, Kan.: Filling vs. crowning.
4. Dr. Truman W. Brophy, Chicago: Surgical clinic.
5. Dr. J. D. Patterson, Kansas City: The ideal base plate.
6. Dr. T. L. Pepperling, St. Louis: Banding Logan crown.
7. Dr. Austin C. Hewett, Chicago: Combination gold and amalgam filling at single sitting.
8. Dr. W. L. Reed, Mexico: Pressure anesthesia for pulp extirpation.
9. Dr. L. W. Nevius, Chicago: Administration of nitrous oxide gas and extracting.
10. Dr. Otto J. Fruch, St. Louis: Seamless crowns and inlays.
11. Dr. S. C. A. Rubey, Clinton: Davis crown.
12. Dr. W. B. Stanza, St. Louis: Richmond crown.
13. Dr. J. T. Hull, Butler: A method of taking an impression.
14. Dr. J. F. Austin, St. Louis: Ideal cavity preparation for gold.

15. Dr. L. E. Jenkins, Fredericktown: Combination filling, gold predominating.
16. Dr. D. J. McMillen, Kansas City: Subject to be announced.
17. Dr. A. J. Prosser, St. Louis: Table clinic; the blending of gold and platinum in fillings.
18. Dr. E. N. LeVeine, Kansas City: Porcelain crown.
19. Dr. C. D. Lukens, St. Louis: Orthodontia.
20. Dr. J. S. Bridgeford, Macon: Extracting molar roots.
21. Dr. W. W. Gardiner, St. Louis: A method of contouring crowns.
22. Dr. H. A. Cress, Warrensburg: Gold filling.
23. Dr. Samuel Williams, St. Louis: A method of packing two colors of vulcanite.
24. Dr. U. S. Hougland, Kansas City: Porcelain bridge work.
25. Dr. A. Tschirner, St. Louis: Some new and useful things.
26. Dr. J. T. Richardson, Kansas City: Gasoline blowpipe.
27. Dr. P. Holme Morrison, St. Louis: Removable root canal filling with silver wire.
28. Dr. J. B. Vernon, St. Louis: Gold filling—Vernon's gold.

B. L. THORPE, St. Louis,
Corresponding Secretary.
F. M. FULKERSON, *Chairman Executive Committee*, Sedalia.

OBITUARY.

DR. GEO. S. NASON.

Died in Omaha, suddenly on May 23, George S. Nason, D. D. S., aged thirty-four years. Dr. Nason was a graduate of the Pennsylvania College of Dental Surgery, class of 1890. He leaves a widow to mourn his untimely taking off. He was associated with Dr. A. W. Nason and was formerly a member of the State Board of Dental Examiners for Nebraska and was a member of the Odontological Society of Omaha, the Nebraska State and the National Dental Associations. It seems impossible to realize that Dr. Geo. Nason is dead, but alas, it is too true. May his spirit secure that perfect rest in the bosom of his maker.

THEODORE EMMANUEL LE CAUDEY.

WHEREAS, we, the members of the American Dental Society of Europe have heard with deep regret of the death of our distinguished colleague Dr. Theodore Emmanuel Le Caudey, therefore:

Resolved, that by this sad event our profession has lost one of its most revered members, whose fame belonged not only to his own country, but which was also the prized possession of the civilized world.

Resolved, that we offer to his afflicted family the assurances of our respectful sympathy.

W. E. ROYCE,
N. S. JENKINS,
W. R. PATTON.
Committee American Dental Society of Europe.

W. H. MORGAN, M. D., D. D. S.

Dr. William Henry Morgan died May 16 at his home in Nashville. He was eighty-four years of age. We take the following sketch of his life from the *Nashville Banner:*

Dr. Morgan, eminent dentist and professor emeritus in Vanderbilt University, was born in Logan County, Ky., February 22, 1818, the son of Joseph and Elizabeth Adams Morgan. His father was a soldier in the war of 1812, participating in the Tippecanoe campaign and fighting under Jackson at New Orleans. His grandfather was a colonel in the Revolutionary War and was a first cousin to Gen. Daniel Morgan of the Continental Army.

EARLY EDUCATION.

His mother died when he was but six years old and his early education was neglected, the little he received coming through the Sunday school, where he acquired a taste for reading. He worked on the farm and saved his earnings to buy books. At the age of twenty-seven, with a few hundred dollars scraped together by strict economy, he entered the Baltimore College of Dental Surgery, one of the only two dental colleges then in existence.

CAME TO NASHVILLE IN 1849.

He graduated in 1848, and after practicing one year in Russellville, Ky., came to Nashville in 1849. He formed a partnership with T. B. Hamlin, D. D. S., the only other graduate dentist in the State at that time, which continued for ten years.

Dr. Morgan attained a national reputation in his profession. Twice he was elected president of the American Dental Association, and he has also been president of the Central States, Mississippi Valley, Ohio College, Tennessee and Nashville associations.

AS AN EDUCATOR.

He was a member of the Board of Trustees of the Ohio Dental College from 1865 to 1879 and president of the board when, in 1879, he was elected to the chair of clinical dentistry and dental pathology in Vanderbilt University. He then organized the dental department of Vanderbilt and was its dean until forced to retire by advancing age. His contributions to dental literature were many and are a recognized authority and his labors have been a great factor in the elevation of the profession in America.

MEMBER OF INDIAN COMMISSION.

In 1885 he was appointed to the Indian Commission by President Cleveland and served in that capacity during a portion of President Harrison's administration, when he retired on account of advancing age.

Dr. Morgan was a high Mason, a member of the Scottish Rite, and has served as prelate of the Nashville Commandery, Knights Templar, for many years.

AN EARNEST METHODIST.

Dr. Morgan joined the Methodist Church in his early youth and has been a member of McKendree Church since 1865, and an official member during all these years. He was for years superintendent of the Sunday school, a delegate to many annual conferences, and was twice a delegate to the general conference.

For thirty years he was a member of the book committee of the Methodist Episcopal Church, South, which has control of the publishing house, and for the last twelve years of that time was the chairman of the committee. He was succeeded on the committee by his son, Mr. Jo B. Morgan, and in the chairmanship by Dr. Collins Denny when he resigned on account of his age.

He was married in 1852 to Miss Sarah A. Noel, of Kentucky, and was the father of four children, Mrs. C. H. Noyes, of Warren, Pa., and Dr. Henry W. Morgan, Messrs. Jo B. Morgan and Garnett N. Morgan, of Nashville.

Dr. H. J. McKellops.

In the death of Dr. H. J. McKellops, on April 23, 1901, St. Louis has lost the last of her pioneers in the profession of dentistry.

Dr. McKellops began the practice of the profession when scarcely half a dozen dentists had offices in St. Louis, his colleagues then being such men as Isaiah Forbes, Aaron Blake, Isaac Comstock, J. L. Clark, C. W. Spalding and H. E. Peebles. All of these had passed away when death closed the career of Dr. McKellops. He had been for fifty-six years an active practitioner. In that time his reputation had extended over the United States; he had contributed much to the material advancement of the profession of dentistry, and more than any one else in the city, perhaps, had been instrumental in bringing to it the prestige it enjoys as one of the learned professions.

Dr. McKellops was born at Saline, near Syracuse, N. Y., on August 31, 1823. His father, James McKellops, died before his son had entered his teens. In 1840 he came to St. Louis with his mother and sister, entering one of the public schools. Active and intelligent, he soon after obtained appointment as a messenger in the Missouri legislature, using the money thus earned for tuition at the University of Missouri, at Columbia, where he studied from 1842 to 1844. A course of bookkeeping in Jones' Commercial College followed this schooling, after which he found employment in the city registrar's office, where opportunity presented for forming a wide circle of acquaintances, valuable afterward when he entered the practice of dentistry.

He was drawn to the study of medicine in 1846 and 1847 at the old St. Louis Medical College, of which Dr. Charles A. Pope was dean. For the next six years he attended many of the lectures, but never took the degree of M. D

Through the persuasion of his brother-in-law, Dr. Geo. Silvers, a dentist, he was drawn from medicine to the practice of dentistry, although he afterward enjoyed the distinction of having delivered the first white child born in Montana. Natural ingenuity and a love of the mechanical arts soon made him an expert operator, and soon after opening his first office he commanded a practice of the highest class.

In 1855 the degree of D. D. S. was conferred on him by the Ohio College of Dental Surgery in recognition of his skill and services to the profession, his fame already having extended through Missouri and eventually through all the States of the Union. A sojourn in London and Paris from 1863 to 1865 made him known abroad as well. In Paris and London in 1864 he introduced the use of the mallet in dentistry before the Odontological Society of London. Dr. McKellops also introduced in St. Louis the use of continuous gum work, invented by Dr. John Allen, of New York. In his profession he was studious, inventive in practice, and always to the front in every step of progress in dental surgery. The doctor was a subscriber to all the dental periodicals, and possessed the most extensive dental library in the world.

A loving cup was left by him on which appears the following: "Presented to Dr. H. J. McKellops by the First Dental Society of the State of New York, as an expression of the high esteem and as a token of its appreciation of the inestimable services rendered by him as supervisor of clinics at the annual meetings, New York City, January 21, 1891."

The St. Louis Dental Society on March 24, 1900, tendered Dr. McKellops a banquet as a token of esteem and love.

He is admitted to have done more than any other dentist in St. Louis to educate the better class of the public up to an appreciation of the importance of the care of the teeth, the value of high class dentistry in contrast to low class, and an acquiescence in a proper remuneration for such services. His influence in these directions still is felt and will continue to be felt.

Personally Dr. McKellops was a man of high ideals, sociable and warm-hearted. His sociability found expression in the field of his profession, in the organization of dental societies and associations, in the proceedings of which he always took a leading part. He was one of the organizers of the St. Louis Dental Society, founded on December 9, 1856, and in 1879 served as its president. He helped organize, also, the Western Dental Association, in 1860, was first president of the Missouri State Dental Association in 1865, served as president of the American Dental Association in 1878, and in 1884 was elected president of the Southern Dental Association. He was also a constant attendant of the Mississippi Valley Association of Dental Surgeons.

In social life, no less than in his profession, Dr. McKellops was popular, and he was a particularly welcome guest at social gatherings, because of his high intelligence and brilliant powers of entertaining.

Dr. McKellops also had a military side to his career. He was captain of the St. Louis Cadets, commissioned by General Edwards in 1842, and in 1845 became a captain in the St. Louis Legion. In 1846 he commanded the Morgan Riflemen in the Legion's six months' service in the Mexican war, making the noted six months' expedition under Colonel Alton R. Easton, which included New Orleans, Brazos, Santiago, and up the Rio Grande to Matamoras. At the organization of the St. Louis National Guards, in the fifties, he was enrolled as a member and served in the riots of those days. Afterward, as Assistant Adjutant General of the First Brigade, in 1858, he marched across the State with the expedition under General D. M. Frost, to put down the invasion of the "Bushwackers" and "Jayhawkers," who then were ravaging the western counties of Missouri.

The observations of the necessity of dentists in the army, no doubt prompted Dr. McKellops to introduce a resolution at a meeting of the Western Dental Society, held in Quincy, Ill., on July 21, 1858, to the effect that a committee be appointed to memorialize congress on the necessity of appointing dentists to be attached to the regular army. The resolution was adopted and a similar resolution was passed by the American Dental Convention in August the same year, being introduced by Dr. McKellops.

Dr. McKellops married Miss Annie Gower, of Tennessee, on April 4, 1849. Eight children were born, five sons and three daughters. Those now living are Dr. Henry L. McKellops and Mrs. Josephine Bouvier, of San Francisco, Linton J. McKellops and Dr. Leo G. McKellops, of St. Louis, Gerald G. McKellops, of Cincinnati. His sister, nearly ten years his senior, still survives and resides in New York.

John G. Harper,
Burton L. Thorpe,
Edward H. Angle,
Committee.

IN MEMORIAM.

Dr. Theodore F. Chupein.

Resolutions of respect to Dr. Theodore F. Chupein.

At a regular meeting of the Pennsylvania Association of Dental Surgeons held Tuesday evening, April 9, 1901, the Committee on Resolutions upon the death of Dr. Theodore F. Chupein submitted the following, which were accepted and adopted:

Whereas, With profound regret the Pennsylvania Association of Dental Surgeons is called upon to notice the death of Dr. Theodore F. Chupein, an old, tried and faithful member, it is meet and fitting that it should place on record its appreciation of his long and faithful services as a member, and of his far-reaching, earnest and valued services to the profession he loved.

Dr. Chupein became a member of the Association September 13, 1876, and at once, with earnestness, took and has continued to take with unflagging zeal an active part in all its work. He was elected recording secretary October 9, 1877, and by reëlection continued to serve until his death, March 23, 1901.

His earnestness in professional work, his faithfulness as a member and officer of this Association, his manliness and his friendliness well merits our most profound appreciation and respect.

Be it therefore

Resolved, That by the death of Dr. Theodore F. Chupein, the dental profession has lost an earnest and progressive member, and this society a firm and fast friend.

Resolved, That bowing in humble submission to the will of Him who doeth all things well, we hereby express our heartfelt sympathy to his bereaved wife and family; and be it further

Resolved, That a copy of these resolutions be transmitted to his family, and published in the dental journals.

Wilbur F. Litch,
William H. Trueman, } *Committee.*

J. Clarence Salvas,
Secretary.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

PERIDENTAL ABSCESS.*

BY EUGENE S. TALBOT, M. D., D. D. S., CHICAGO, ILL.

A paper read before this society last year by Dr. Edward C. Kirk, upon the subject of "Pericemental Abscess," was recently discussed in an editorial by Dr. R. Ottolengui,[1] who states that "it remains for Dr. Kirk to demonstrate that pericemental abscess may be caused by an infection which reaches the pericementum through the blood channels." Here Dr. Ottolengui evinces rather remarkable ignorance of current literature. Studies of my own, for example, have during the past twelve years dealt with the pathology of peridental abscesses from the onset to breaking down of tissue and resultant abscess. These researches have been summed up in my work on "Interstitial Gingivitis or So-Called Pyorrhoea Alveolaris," published two years ago. The loose notions so current under auto-bacteriologic fads were therein exploded and the entire subject of peridental abscess discussed for the first time from the standpoint of experiments guided by modern pathology.

The term Pericemental Abscess implies a misconception of the pathology involved. The impression given is that it forms on the lines of an alveolar abscess; that it is attached to the tooth root and can be removed with the tooth when extracted. This has not been my experience. Pus infection follows the vessels in the alveolar process and peridental membrane, with the result that abscess occurs in the peridental membrane near the alveolar process or in the fibrous tissue where the alveolar process once was located. For this reason, when the teeth are extracted, the abscess rarely comes away with the tooth. These abscesses not infrequently form in the center or upon the outer surface of what had been the alveolar process. Since the term "peridental membrane". is commonly accepted, its derivative, "peridental abscess," obviously suggests itself, since the abscess may be located around the tooth, in the peridental membrane, periosteum or at any point that had been the alveolar process.

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* Read before the New York State Dental Society, May, 1901.

[1] Items of Interest, March, 1901.

Pathology of the structure which surrounds the teeth cannot be understood unless the normal condition be known. The alveolar process is composed of loose or cancellated bone structure and is solely for the purpose of holding the teeth in place. When the teeth are absent, the alveolar process is not present. In the lower vertebrates, there is a continuous succession of teeth (or polyphyodontia). When one tooth has performed its function it disappears to give way to another. This continues throughout life. In the development of man, change occurs. The two sets or dyphyodontia condition has developed. The alveolar process and teeth have, however, retained remnants of the physiologic processes of removing useless structures. Should man live long enough, he would normally lose his second set of teeth by osteomalacia or senile absorption. This is one factor of the transitory nature of the alveolar process.

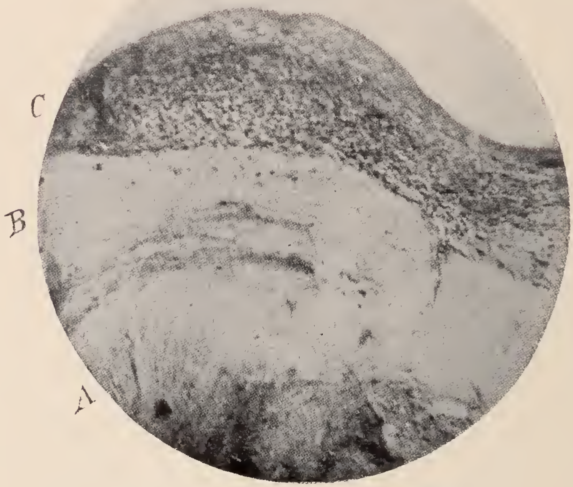

Fig. 1. Inflammation of peridental membrane.

Another factor has been brought about by the evolution of the jaws. Human jaws once measured 2.75 inches laterally. There was excessive prognathism. Much work was performed by the jaws and teeth. These have been growing smaller and smaller until to-day they easily measure two inches in diameter. Prognathism has approximated orthognathism. Methods of etiquette as to moving the jaw in mastication with the mouth closed have had much to do with the disuse of the jaws. When the teeth have not grown smaller in proportion, irregularities result. Having these two great factors with which to contend, the alveolar process is necessarily the most transitory structure in the body. Hence it is likewise the most morbidly susceptible of structures.

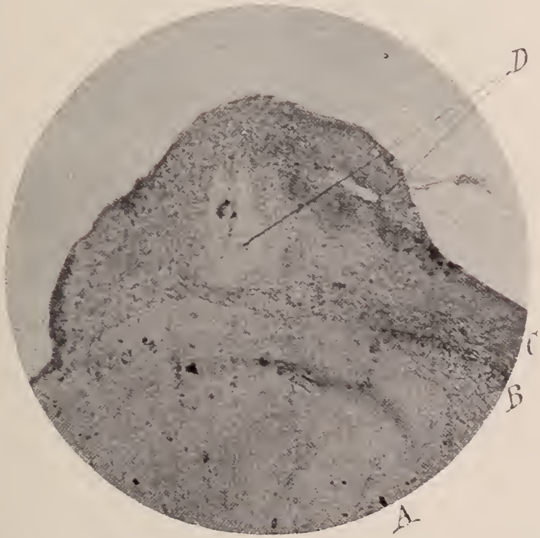

Fig. 2. Thickening of peridental membrane with abscess.

Other than for etiologic purposes it is erroneous to speak of "many forms of gingivitis," or to state, "the disease presents two, three, four or five different forms, etc." No matter whether the irritation be local or constitutional, the result and the pathology are the same.

Inflammation in the alveolar process and soft tissues takes the same course it would in other bones and soft tissues. It will either terminate in resolution and the structures return to nearly normal, or it will result in absorption, ulceration and abscess.

Inflammation either builds up the structure as in hypertrophy so beautifully illustrated by Dr. G. Lenox Curtis,[1] in "Syphilitic Loculosis Alveolaris," or it destroys the bone by absorption.

Irritation, when local, first produces gingivitis, which, becoming chronic, extends to the alveolar process and assumes an interstitial character. When irritation is constitutional, due to auto-intoxication or drug poisoning, the alveolar process and deeper tissues first become involved, then assuming an interstitial character, later affecting the gums, producing gingivitis.

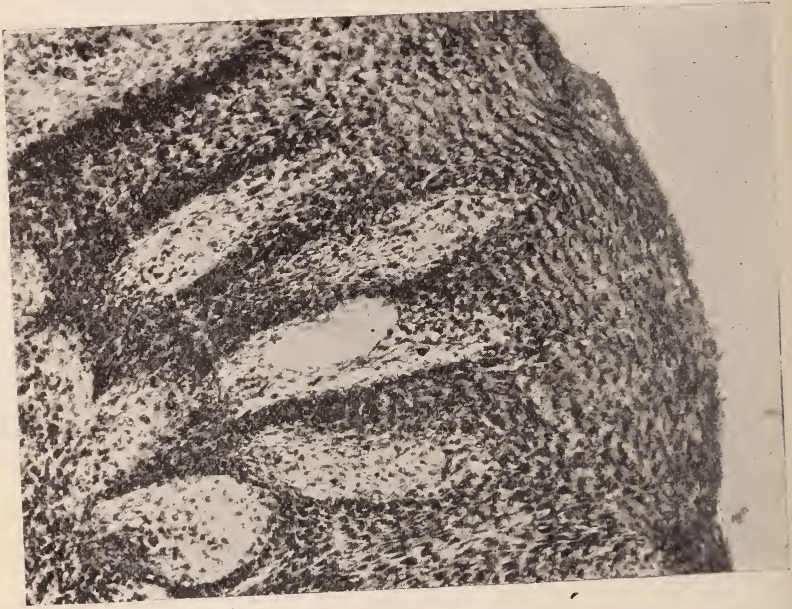

Fig. 3. Inflammation of the gum.

How susceptible the alveolar process is to interstitial gingivitis is well illustrated in every-day cases. Extract two teeth upon one jaw, inflammation about the tooth or teeth having no occlusion sets in, bone cells are deposited, the alveolar process elongates carrying the tooth or teeth upward or downward until occlusion is restored. Later, when auto-intoxication takes place or drug poison, violent inflammation sets in with marked interstitial gingivitis, absorption and loosening the teeth.

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[1] Journal American Medical Association, June, 1900.

A seamstress bites her thread. Interstitial gingivitis results with absorption of the bone and loosening of the teeth. Persons with very low vitality, poorly nourished people, suffering with prolonged sickness, pregnant women, have general interstitial gingivitis. Persons overworked or suffering with neurasthenia are prone to interstitial gingivitis.

In syphilis, interstitial inflammation is not only set up in the alveolar process, but in all bones of the body as well, causing hypertrophy as well as absorption and death of bone. Heat and allied irritation will produce interstitial gingivitis and bone absorption.

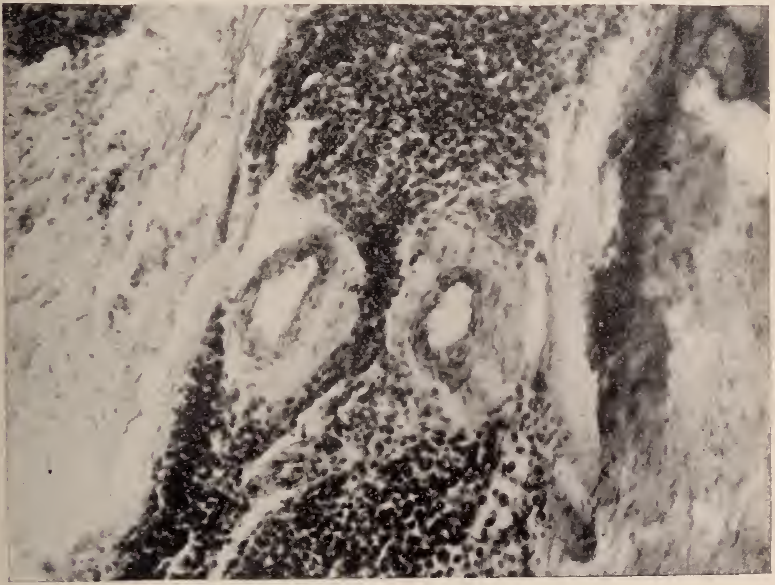

Fig. 4. Round cell infiltration from arteries.

Some more severe forms of interstitial gingivitis deserve attention from the irritation point of view. I have for years moved the teeth of dogs with regulating appliances, using a screw, sixty threads to the inch. In some the screw was turned one-quarter around, in others one-half, and in still others one full turn once a day. Some of the dogs were killed in three days, others in a week, and still others in two weeks. By this method, the simplest and most severe forms of pressure were applied. The length of time being brief as well as extended. These tissues were decalcified, cut, stained, and mounted for the microscope. In every case, inflammation was produced. This disproves the theory so long held that bone absorption in regulating teeth was purely a physiologic process. Teeth were also extracted in dogs, and after a week they were killed. The bone was decalcified, cut, stained and mounted for the microscope. The absorption was inflammatory in character. The jaws of dogs and monkeys who were erupting the second teeth were treated in like manner. Absorption of the alveolar process to allow the teeth to pass into position was of inflammatory type. The simple irritation as well as the severe pressure hence produces the same pathologic process, inflammation or interstitial gingivitis.

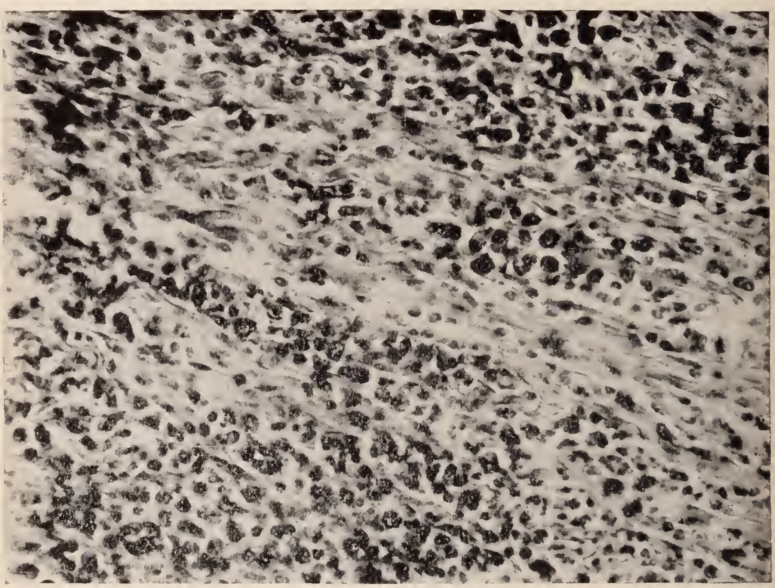

Fig. 5. Inflammation and fibrous tissue.

The blood vessels which supply the gums, peridental membrane and alveolar process are, as I have elsewhere demonstrated, closely connected,[1] those in the peridental membrane forming a plexus along the wall of the alveolar process, while only a small number are near the roots of the teeth. So closely connected are these that the vessels in one tissue cannot become involved without involving those of the other tissues. Hence gingivitis occurs, which in reality becomes interstitial, or interstitial inflammation appears which in reality becomes a gingivitis.

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[1] International Dental Journal, April, 1896.

No matter what the cause may be, or whether the initial lesion be in the gum or interstitial structure, absorption of the alveolar process results.

Three forms of the absorption of the alveolar process are always present—Halisteresis, Volkmann's perforating canal and lacunar or osteoclast absorption. These are named in the order of the rapidity in which they destroy the alveolar process. Inflammation and bone absorption may and does go on for years without pus infection. Dr. Edwin T. Darby first described pericemental abscess about 1880. Pus germs may be carried to any part of the inflamed process, as I have elsewhere shown.[2] An abscess may form at the border of the alveolar process, it may form upon the periosteum at the outer border. Owing to the tortuous position of the blood

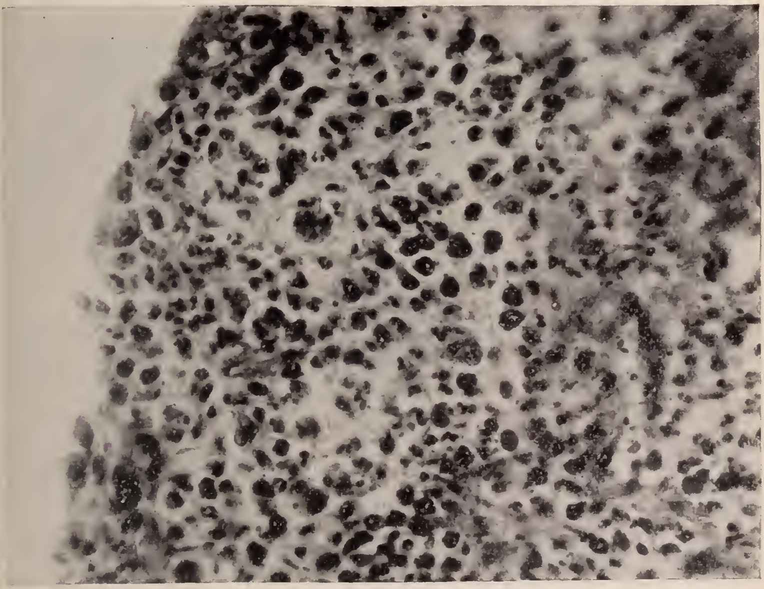

Fig. 6. Inflammation without fibrous tissue.

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[2] Journal of the American Medical Association, Jan. 16, 1897. Interstitial Gingivitis or So-called Pyorrhoea Alveolaris.

vessels in the alveolar process, the pus germs usually collect at the border, stasis of blood generally being greatest at that point. I first demonstrated absorption of the alveolar process, thickening and breaking down of tissue into an abscess, in 1896. This tooth was taken from the mouth of a fifty-four-year-old man. He was suffering from auto-intoxication due to neurasthenia from overwork with slight attack of Bright's disease, Figs, 1 and 2. These are of low magnifying power. Fig. 1 shows the first stages, round cell infiltration and thickening of the peridental membrane with corresponding absorption of the alveolar process, which does not show here. Fig. 2 illustrates thickening of the peridental membrane, which in reality is nothing more than a large area of fibrous tissue, the result of absorption of the lime salts of the bone, leaving the mesh of fibers, which occasionally come away with the extracted tooth. The pathologic state is here farther advanced than in Fig. 1. In the center of this thickened mass is seen a white area at D a breaking down of tissue. To the right and near the edge the tissue has broken down and an abscess formed. In

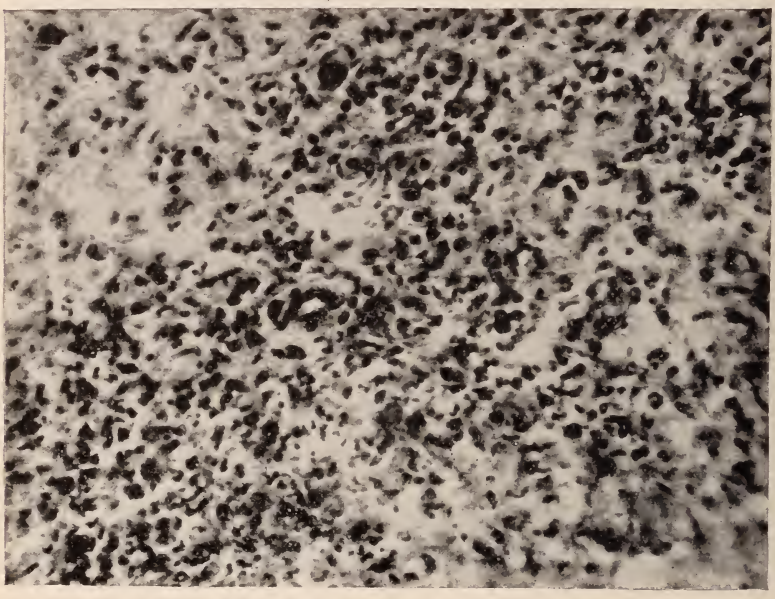

Fig. 7. Acute inflammation.

1897, in an article read before the Section on Stomatology of the American Medical Association, I demonstrated the pathology of the disease from simple inflammation to the breaking down of tissue. The pathology here pictured in this series is illustrative of that in all peridental abscesses.

The following are illustrations magnified 480 diameters. Fig. 3 illustrates gum tissue with round cell infiltration due to irritation from a gold crown. Tooth loosened and was removed. Fig. 4 cross-section of peridental membrane of the left inferior central incisor of a twenty-nine-year-old lady, who had been under my care for fourteen years. Owing to her occupation, that of dressmaking, she had no exercise. She was in the habit of biting her thread with this tooth. She drinks no water. The result, auto-intoxication. Two cross-sections of blood vessels are seen considerably thickened (endarteritis obliterans), with round cell infiltration about them.

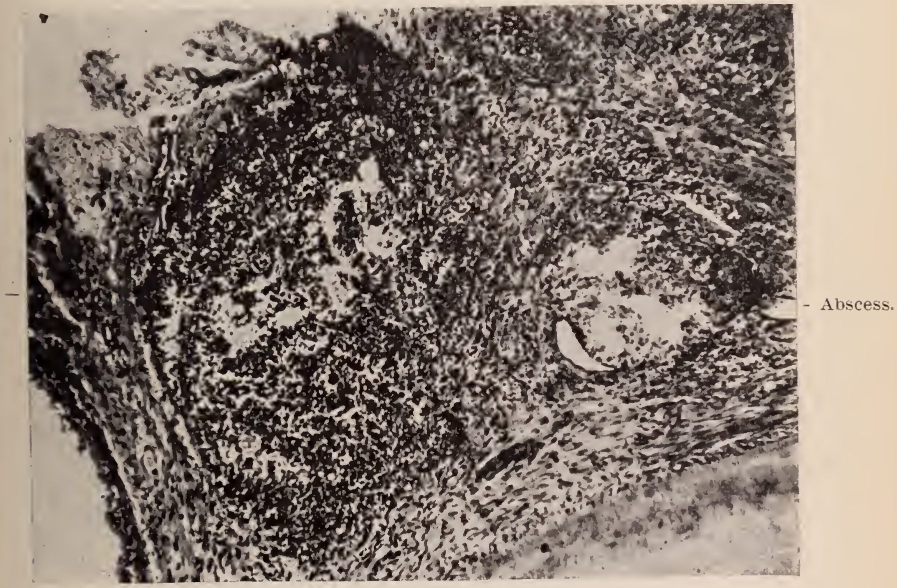

Fig. 8. Formation of two abscesses.

The following four illustrations show different stages of inflammation and degeneration of the peridental membrane of a right superior first molar in a forty-year-old lady, who has had interstitial gingivitis with pyorrhoea for the last twenty years, and is now losing teeth very rapidly and is a marked neurasthenic.

Fig. 5. Cross-section of palatal root near apex, showing connective tissue with active inflammation.

Fig. 6. Cross-section farther down, showing further stage of inflammation of peridental membrane, with all sizes and kinds of connective tissue cells and round cell infiltration.

Fig. 7. Cross-section still farther down on same root, showing further stage of inflammation.

Fig. 8. Cross-section lower down and of low magnifying power; shows degeneration and liquefaction of tissue. Two areas with violent round cell inflammation about to break down into abscesses.

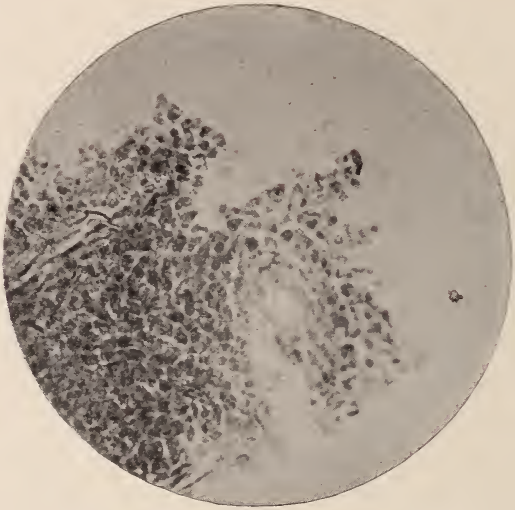

Fig. 9. Inflammation due to mercurial poisoning.

From paper No. 4, Pyorrhoea Alveolaris in Mercurial and Lead Poisoning in *Dental Cosmos,* 1897.

Fig. 9 illustrates active inflammation of the peridental membrane in a forty-eight-year-old merchant, who was a dyspeptic, debilitated and asthmatic. He had been under calomel and tonics for less than two weeks. When he came under observation, the mucous membrane and gums were then much inflamed. There was marked sialorrhoea. The teeth were loose. The gums were swollen. Pus oozed from the gums. The breath had a decided metallic odor. At my suggestion his medical attendant stopped the calomel. He was then ordered six pints of spring water daily. The gums were on alternate days saturated with iodin. In a few days the soreness and swelling were so reduced that the deposits could be removed. The patient was discharged cured in a short time other than as to the right inferior second molar, which was so loose as to require removal. This tooth was placed immediately in fifty per cent alcohol for twenty-four hours and then removed to absolute alcohol for twenty-four hours more. The membrane had receded about two-thirds the length of the root. Sections for microscopic purposes were made from the lower third of the root. Of these sections, Fig. 9 shows a small fragment of inflamed peridental membrane. Fig. 10 exhibits violent round cell inflammation, degeneration and liquefaction of tissue or abscesses.

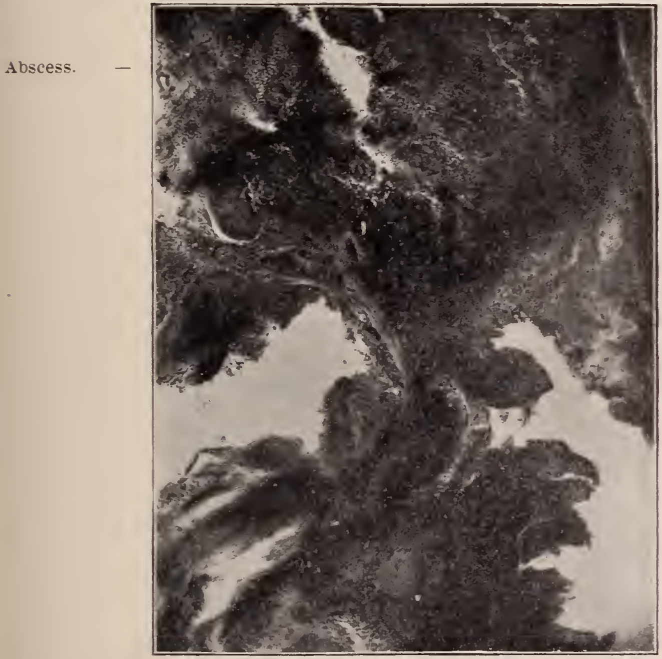

Fig. 10. Abscess due to mercurial poisoning.

A thirty-five-year-old diabetic painter came under observation for lead poisoning. His gums were swollen. There was decided sialorrhoea. The teeth were loose. Pus flowed from the gums. He was placed on ozonate spring water and the gums were saturated with iodin on alternate days. Three loose teeth were removed and placed in alcohol. Sections from the upper third of the left superior second bicuspid gave results on microscopic examination similar to those already described in mercurial. Fig. 11 shows round cells of inflammation. Fig. 12 illustrated very marked degeneration of the peridental membrane. In the right-hand corner are seen the root of the tooth, dentine and cementum. The whole surface of the peridental membrane is in an advanced phase of inflammation. Just at the border of the root is evident an area of membrane softening. Just beyond, but adjoining, is noticeable breaking down of tissue. In the center are seen two areas of softened tissue more advanced in degeneration.

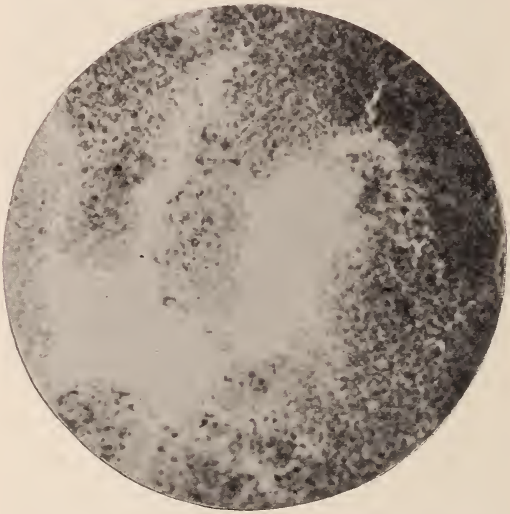

Fig. 11. Inflammation due to lead poisoning.

Two cases are added from my collection, of slides showing peridental abscess, that have never been published. These illustrate the wide range of diseases in which they may occur.

Fig. 13 (X 50) illustrates the four stages of abscess in the peridental membrane of a sixty-eight-year-old diabetic man. He was a contractor, a neurasthenic with auto-intoxication, which finally culminated in kidney lesions. The illustration shows active inflammation at different points, the two lower areas breaking down and liquefaction of tissue. The upper space shows an abscess with bacteria within, while without is seen round cell inflammation.

The following scorbutic case was referred to me by Dr. George W. Johnson:[1]

A twenty-five-year-old American was admitted to Cook County Hospital for the Insane, December 2, 1892, suffering with melancholia, attended by delusions of persecution and suicidal tendencies marked by refusal of food. June 1, 1896, he again began to refuse food, but took liquid diet on persuasion. June 29 the patient was transferred to the hospital because of his emaciation. Scorbutic symptoms were discovered, July 18, 1896, the constitutional and local symptoms of scurvy were well marked. The

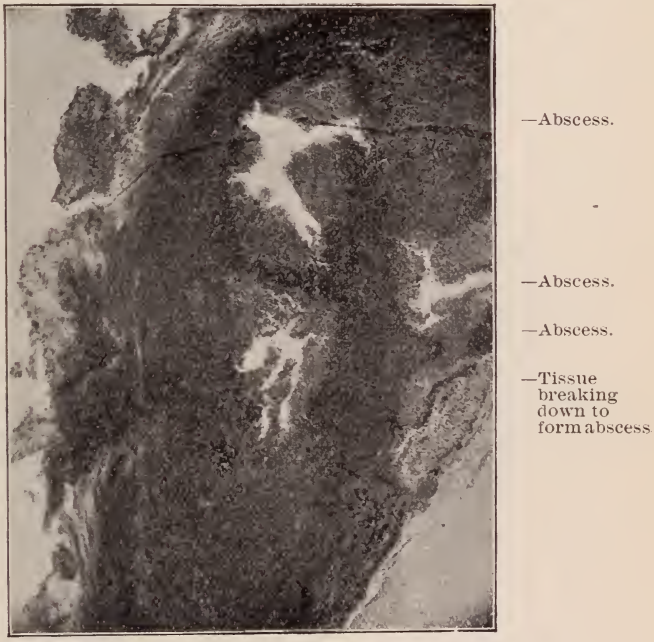

Fig. 12. Four abscesses due to lead poisoning

teeth were covered with sordes and loosened. Under anti-scorbutic treatment these symptoms had fully disappeared by August 13, 1896.

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[1] Journal American Medical Association, April 30, 1898.

Through the kindness of Dr. Johnson, I was allowed to see this patient. I found none of the teeth very loose, showing the disease was superficial. I removed two teeth that were decayed and loosest. These were prepared for the microscope in the usual manner. Fig. 14 shows the gums and peridental membrane in an active state of inflammation. Small blood vessels are observed in different localities with round cell infiltration extending into the tissue. Fig. 15, the root of the right superior second bicuspid with peridental membrane attached, shows active inflammation about an artery which has thickened and an area of tissue degeneration forming an abscess.

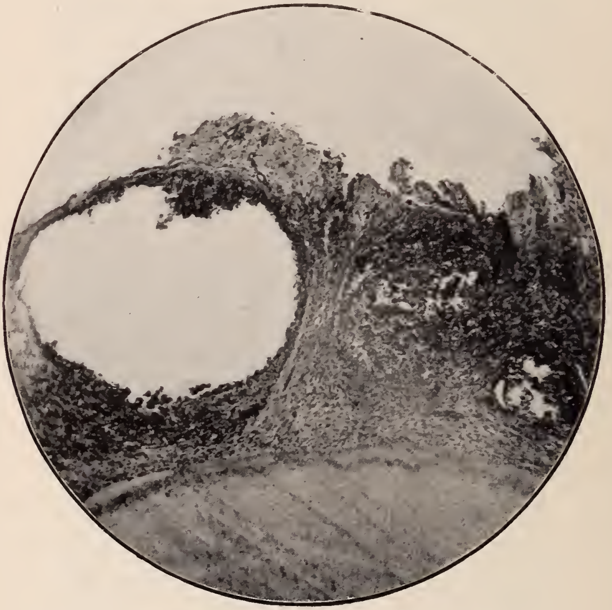

Fig. 13. Four abscesses in a 64 year old diabetic man.

I now propose to call attention to another form of abscess of common occurrence, but as yet undescribed. In interstitial gingivitis, absorption of bone takes place by halisteresis, Volkmann's perforating canal absorption or lacunar or osteoclast absorption.

In nearly every case, as I have elsewhere shown, this absorption so takes place that islands of bone (Fig. 16) become dislodged. These cause irritation, pus germs infect the part and abscesses result about the roots of the teeth. The pus burrows its way to the surface and the spiculae of bone is discharged. The abscess may heal of its own accord, but treatment is generally necessary.

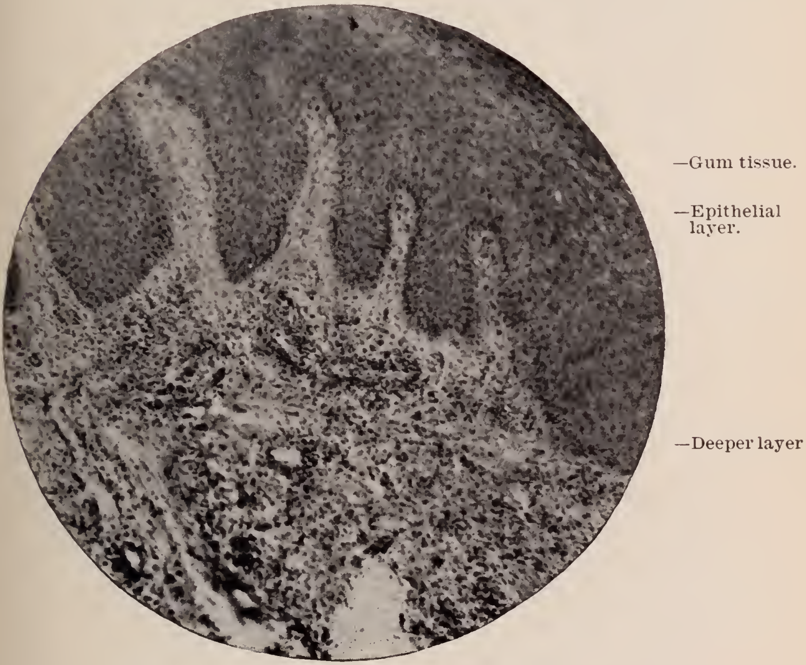

Fig. 14. Scurvy. Round cell infiltration from three small arteries.

The calcic deposit about the roots of teeth and in abscesses is due to absorption of the alveolar process there can be no doubt. In 1898, George T. Carpenter and myself independently made extensive experiments upon pus in abscesses and pockets, each with the following results: Summing, Dr. Carpenter pertinently asks: "But can tissue be absorbed and still remain as debris in the pocket? Such is the condition found in pyorrhoea pockets, which can be easily proved by taking the contents of a pocket, dissolving it in hydrochloric acid, then adding three times its bulk of water; filter, boil, and when cold add a solution of ammonia, which will precipitate the phosphate of calcium. The same result is attained by rinsing a freshly extracted, roughened pyorrhoea root in cold water, then with a stiff brush and water brush the roughened parts and put the resulting product into a test-tube; add hydrochloric acid and water, if necessary; filter and boil and to this add a solution of ammonia, and the lime salts are precipitated."

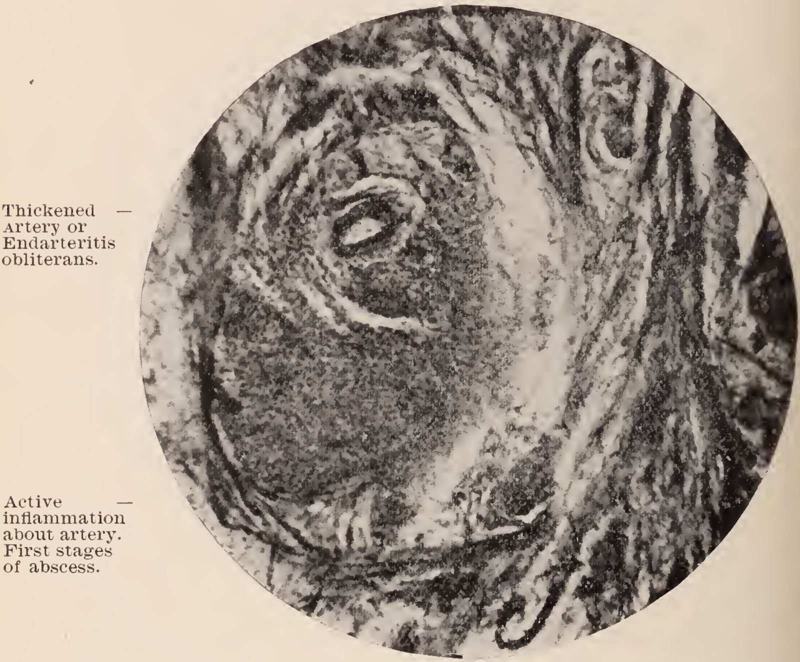
Thickened — Artery or Endarteritis obliterans.
Active — inflammation about artery. First stages of abscess.

Fig. 15. Scurvy.

I* collected the contents of peridental abscesses in a sterilized teaspoon. Dr. Wesener, chemist of the Columbus Medical Laboratory, found that there was an average of eight times more lime salts in the pus cavities than there was in normal blood.

Since stasis of blood has taken place in a large area about the abscess and pus pockets, deposits from the vessels seem out of the question.

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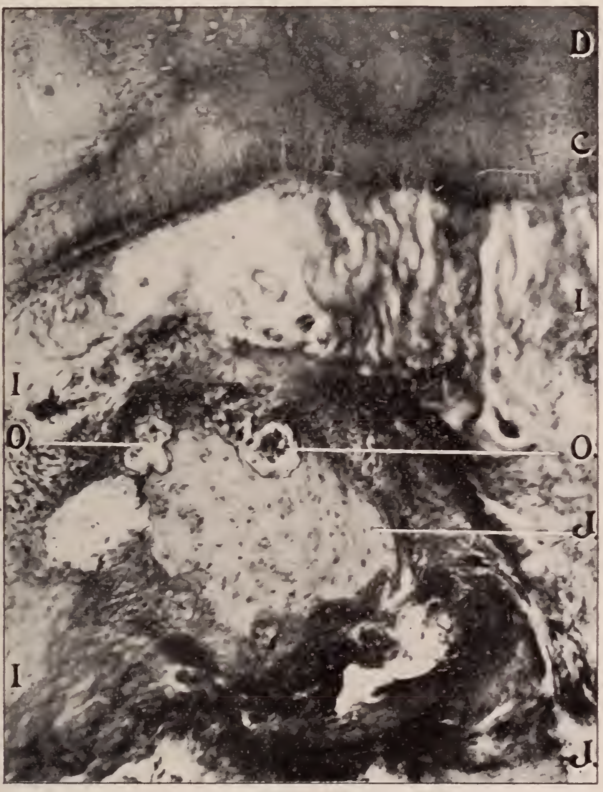
* These experiments intended for "Interstitial Gingivitis or So-called Pyorrhoea Alveolaris" were received too late for publication.

The experiments cited by Dr. Ottolengui from Dr. Kirk are of decades old type, destitute of value as to their special character, containing elements of error not removed by control experiments.



x 50. ½-inch obj. No. Oc.

Fig. 16. Cross section of tooth, Alveolar process and peridental membrane, showing lacunar absorption. Man.

C, Cementum. D, Dentine. I, Peridental Membrane. J, Alveolar Process. O, Lacunar Absorption.

No pathologist acquainted with septicaemic infection would have deemed them worth the time wasted on them. There is a vast field of modern dental pathology which Drs. Kirk and Ottolengui have left unexplored, while wasting time in experiments that even a pathologic neophyte would have disdained to make.

PRESENTATION OF THE TECHNIC OF CROWN AND BRIDGE WORK, METAL AND PORCELAIN.*

By Thomas E. Weeks, D. D. S., Minneapolis, Minn.

In outlining a course in technic, three things should be kept in mind: First, to require the smallest number of pieces which will comprise the fundamental principles underlying the subject. Second, to select such pieces as will appeal to the student as being practical and as having some intrinsic value when completed. Third, to adopt those methods which are simplest and most direct.

Systematic technic teaching in dental colleges has passed the experimental stage, and there seems to be no question as to its value. It now behooves us as teachers to winnow out the chaff, which has been the chief cause of cheapening the article in the minds of the critical, and to leave only the sound kernels which are to furnish food for our children, the students. We must admit that in our earlier efforts we wasted time in repetition, which is seldom of any advantage unless it may be where the clinic is insufficient to provide practical cases. Then only such work is beneficial as will familiarize the student with the qualities and working properties of materials, or aid him in manipulation and construction.

Students usually perform in a perfunctory manner all operations in which they cannot see some direct value or bearing upon those things which they come to the college to learn. This fact should prompt us to select tasks that will be interesting, that do have value, and which appeal to the student as being practical. At the same time we must not lose sight of the necessity for cultivating manual dexterity.

No work should be required which at any stage presents conditions which must be imagined; *all* the conditions must be real. To illustrate: Plates may be made to fit models accurately, but the adapting of plates to the tissues of the mouth cannot be taught on models. Crowns may be perfectly fitted to natural roots mounted in models, but their relation to the surrounding vital tissues as presented in the mouth cannot be illustrated by models. Typical cavity form and the insertion and finishing of the various filling materials may be practiced upon ivory or vulcanite teeth, but the feeling and behavior of enamel and dentine vitally connected cannot be taught out of the mouth, to say nothing of the conditions which determine the outline of cavities and the shaping of the finished filling.

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*Read before the Institute of Pedagogics.

In a word, such portions of our work as are purely mechanical, that can be carried to perfection independently of vital connection, belong justly to a systematic and sequential technic course, while all portions which are governed or modified by vital relations belong properly to the lecture and recitation method, which, by the way, should be fully illustrated by demonstration. The subject should be carefully analyzed under the two heads of what to teach, and how to teach it. Under the first head should be considered the necessary operations, their relations to the vital, mechanical and æsthetic conditions and the causes of failure. The second head should consider what must be taught by precept and example, and what may be accomplished by practice. This last having been determined, it remains to set such tasks for the student as will best fit him for the performance of the operations in the mouth.

In pursuance of this plan we would consider under the subject of crown and bridge work:

First. Those operations which supply useless or missing natural crowns by artificial ones of metal or porcelain, or a combination of the two substances, attached to healthy roots.

Second. The attachment to the root, the health of the root and surrounding tissues, the relation of the new structure to these, its neighbors and its antagonists.

Third. Contour of the surfaces from the physiological, mechanical and æsthetic standpoints, and the formation of articulate sounds.

Fourth. Occlusion and articulation, that will perform the function of mastication.

Fifth. Proper form, bulk, etc., of posts and ferrules or bands, and the correct preparation of roots.

Sixth. The causes of failure, which include insufficient strength of structure, unwise selection of the kind of crown in a given case, and neglect or ignorance of the principles already enunciated.

Analyzing the subject under the second head, we find that the construction of crowns and bridges is almost entirely a laboratory process, and that by using models, properly articulated, bearing natural roots, we may teach in the laboratory the construction of every variety of crown and dummy; the proper form of posts and fer-

CHART.

	CLASS. (Anchorage.)		SUBCLASS. (Material and Construction.)
1	Those depending upon a dowel-post in the root for anchorage.	1	All porcelain crowns without ferrule.
		2	All porcelain crowns with ferrule.
		3	Metal and porcelain crowns without ferrule.
		4	Metal and porcelain crowns with ferrule.
2	Those which as caps envelope the stump of a crown and depend upon it for anchorage.	1	All metal shell or jacket crowns.
		2	Metal shell or jacket crowns with porcelain facing.
		3	Porcelain jacket crowns.

rules, and their adaptation to the roots, with proper contour, contact and occlusion. The other points which relate to vital and artistic conditions must be taught by other methods. As the number of crowns differing more or less in construction is legion, it is wise to separate them into classes:

First, those based upon anchorage, or manner of attachment.

Second, those based upon materials and construction. (See chart.) No matter what the material or the method of construction, all crowns depend upon either the dowel post or the ferrule, or a combination of both, for their attachment.

As no single material or type of construction is indicated in every case, and as each of the seven subdivisions furnish crowns which are indicated above every other under certain conditions, a complete technic course must include the construction of at least one of each type.

On the model before you is illustrated the course selected by the author as best fulfilling the conditions. It comprises:

First. A Logan or other ready-made crown without a band—on the right upper central incisor.

Second. A baked porcelain crown without a band, on some tooth.

Third. A Logan or similar crown with band, on right upper lateral.

Fourth. A baked porcelain crown with band, on right upper cuspid.

Fifth. A metal and porcelain crown without band, on right upper central.

Sixth. A metal and porcelain crown with band, on left upper cuspid.

Seventh. A metal shell crown, on left upper first molar.

Eighth. A metal shell crown with porcelain facing, on right upper second bicuspid.

Ninth. A porcelain jacket crown, on peg-shaped right upper lateral.

Tenth. A metal shell crown with labial face cut out to show the natural tooth, on right upper cuspid.

Eleventh. A metal and porcelain dummy soldered, for left upper first bicuspid.

Twelfth. A metal and porcelain dummy, facing removable, for left upper lateral (resting on gum).

Thirteenth. An all metal dummy, for left upper second bicuspid.

Fourteenth. A metal and porcelain dummy, removable facing, for right upper bicuspid.

Fifteenth. A baked porcelain crown, on right upper second bicuspid.

Sixteenth. A baked porcelain dummy, for right upper first bicuspid.

These several operations when Nos. 6, 7, 11, 12, and 13 are combined in one bridge; Nos. 8, 10 and 14 in another, and Nos. 4, 15 and 16 in a third, give us such a variety as to include all the principles, materials and methods of construction.

Having decided what shall be included in our technic course, that is, what to do, we are ready to determine how to do it.

In the first place, all the students should have models which are alike; to insure this, a number of tin models are prepared, which possess the necessary qualifications. These are issued to the students, who at the same time are provided with the necessary teeth and roots upon which to build the crowns. Thus provided, they make plaster models with the roots in their proper position. These models, with the lower ones, which are properly articulated, are mounted in a Bonwill or other anatomical articulator. This work must be done under the close supervision of an instructor, in order that the models shall be properly constructed, with the natural teeth and roots in their proper positions and relations.

As all the operations require the use of a metal to some extent, it becomes necessary to select a metal which will best meet the requirements. After experimenting with copper, brass and German silver, they have all been discarded in favor of aluminum bronze, which is easily swaged, fuses at a high temperature, consequently is not easily burned, oxidizes less than the other metals, and presents, when polished, a color closely resembling gold.

The one objection is the expense, but as the quantity used is so small, the expense is harldy worth considering. The posts may be made of German silver.

Two grades of silver solder having such difference in the fusing point that the low grade may be fused upon the high grade, are necessary. The high grade is used in the construction of all crowns and dummies, while the low grade is used for uniting these in the completed bridges. In the baked porcelain crowns no metal has been found which takes the place of platinum; on account of the expense it is necessary to make the posts much smaller and the caps much thinner than would be indicated in practical work. This, of course, necessitates impressing upon the student the proper size of post and thickness of metal for the cap when used in the mouth. In the soldering of this work, a solder of eighty parts of pure gold and twenty parts pure platinum, is used for uniting bands, caps and posts, while pure gold is used for uniting the pins of the facing with the post. This latter is done to avoid the danger of changing the color of the facing under the high degree of heat which is necessary to fuse platinum solder.

In preparing roots for all crowns which use the dowel post, ferrule or band, there is a wide divergence in the practice of different operators. However, there are certain principles which must be observed. The first is that where the band or ferrule is employed, that portion of the root which extends crownward from the gingival line, must be slightly larger in circumference at the gingival line; the second is that the end of the root should be so formed as to present a firm seat for the crown; this is true whether there is a band or not.

In the construction of any porcelain and metal crown, for the ten anterior teeth, it is desirable that metal should not be apparent on the labial surface. To insure this the labial half or third should be shortened so that the free border of the gum will cover the band in this locality. This is illustrated in the preparation of the cuspid, incisor and bicuspid roots. The first preparation is where it is necessary to supplement the post by retaining some considerable portion of the linguo-gingival ridge; this may be employed also in metal and porcelain crowns where the lingual surface is contoured with solder, as it results in a saving of solder.

The second form is used where the occlusion is such that the linguo-gingival ridge must be sacrificed in order to insure strength in this portion of the structure; it is chiefly indicated for the baked porcelain crowns. The preparation for crowns without bands is illustrated by these two central incisor roots. The preparation of the labial portion of each is identical; the difference is that in the first the root is so shortened throughout its whole circumference that the joint between crown and root is covered by the free border of the gum. There are times, however, when it is desirable to expose as much of the joint as is possible under æsthetic laws to the cleansing action of the tongue.

In such cases the second form of preparation is indicated.

It is not the purpose of this paper to discuss the question as to the necessity for devitalizing pulps in all cases where the jacket crown is employed, but so long as many good operators continue to adjust such crowns in selected cases without devitalizing, it is competent to consider one or two rules based upon principles. It is not necessary that the *diameter* of the stump in every aspect should be greater at the gingival line; but it is necessary that the *circumference* should be the greatest at this point. If the mesial and distal walls can be so formed as to show a decided central inclination either the buccal or lingual wall may show a convergence from the central axis. In such cases the opposing wall must be almost or quite parallel with the central axis. With the proper form and construction of the occlusal surface it is not always necessary to remove all of the enamel upon the occlusal surface.

The preparation of the right upper lateral, cuspid and bicuspid and the left upper molar will show such preparation as might under certain favorable condition, dispense with the devitalizing of the pulps. In the construction of dummies there are two types—those which rest with equal pressure upon the gum throughout their whole circumference, and those in which the lingual surface is cut away in such a manner that only the labial or buccal edge of the gingival end comes in contact with the gum. As both forms are employed the course should comprise them both.

As each operation upon the model comprises something of interest, either in principle or construction, we will take them up in regular order. In most of the operations, the steps have been illustrated in detail. The heroic model is a reproduction, enlarged ten times, of the upper model used by the students, and saving the relation to the teeth of the lower model, the work is constructed as in the smaller model. Because of the difficulty in manipulation, the thickness of the metal is less than ten times that of the metal used by the students—that being twenty-eight gauge for caps, shell crowns and dummies, and thirty-six gauge for backings, in all operations employing the bronze. In all other particulars we have striven to observe proportion.

As the central incisors are generally teeth which indicate the application of a porcelain crown without a band, the right upper central is selected for the first operation.

The crown is cut off to within one millimeter of the gingival line; this gives it a concavity from mesial to distal, and a plane surface from labial to lingual. For the purpose of cheapening the cost of material, an old-fashioned pivot tooth is selected and ground to fit the root. The canal is now enlarged for the reception of the dowel post; when so enlarged, the opening presents an oval form, having its greatest measurement labio-lingually. A post of German silver, having the form of a parallelogram in cross section, is fitted in the enlarged canal.

The projecting end is cut off to the proper length, and made to fit accurately into the recess in the porcelain crown. After fixing the post in the recess with cement, the crown is ready for final adjustment. This crown is fitted to the root in which the preparation permits the joint to be covered by the free border of the gum, and teaches the making of posts and the grinding of crowns to fit the end of roots.

As lateral roots often indicate the use of a ferrule the right lateral has been chosen for the porcelain crown with band. In this case the root is prepared much the same as for any dowel post crown with a band; special care must be taken that the end of the root is so formed that the band cannot under any conditions creep up to impinge upon the tissues at the gingival line; the crown is adapted into the coronal edge of the band by grinding and swaging. The same kind of tooth is used here as for the central, and the post is fixed in the recess in the same manner. This is operation No. 3 and gives the student his first lesson in making and adapting a band to the root. For the same reason which prevailed in the porcelain crown without a band we may select the right upper central incisor for operation No. 5; the metal and porcelain crown without band. This operation consists in burnishing a thin plate of metal cut to the outline of the root, against the end of the root, passing the post which has been previously fitted into the enlarged canal, through a perforation in the center and uniting the two with solder. After being assured that the metal plate fits the root perfectly, the facing is ground to fit, backed properly with metal and fastened to the post, The crown is now completed with high grade solder which unites the facing, plate and post, and completes the lingual contour. In this operation the student learns to properly shape a facing; to apply a metal backing properly, and to flow solder in sufficient quantity to form contour. He should also be impressed with the necessity of having the metal on lingual surface strong enough to resist all stress, thus protecting the facing from fracture.

In operation No. 6, metal and porcelain crown with band, the method and lesson is the same as in No. 5, after the construction of the cap. Here the student should learn the proper construction of caps for all types of crown where they are employed as a foundation.

Operation No. 7, gold shell crown, teaches the adaptation and shaping of a band of sufficient width to form the axial surfaces of the completed crown; the carving of a model for the occlusal surface, the making of a metallic die or matrix in which the occlusal surface is formed, and the reinforcing of this occlusal surface and uniting of it to the band with solder.

In operation No. 11, metal and porcelain dummy with a so-called self-cleansing lingual surface, teaches that the facing in this case requires a different form from those already adjusted. It also teaches the construction of an occlusal surface and its proper adaptation to the facing, besides giving further facility in the forming of contours with solder. By this time the student has probably learned that it is possible to crack porcelain facings in the soldering process, and will doubtless welcome the instruction given in operation No. 12, where he makes a dummy for the left upper lateral, with the facing riveted to the metal work after the soldering and finishing is complete. He also learns how to construct a dummy whose gingival end shall be accurately adapted to the model. As the several pieces comprising the first bridge are now complete, it remains to assemble them in their proper relations and unite them with low grade solder. When this is accomplished the student should have gained sufficient knowledge and ability to enable him to perform the simpler operations of crown and bridge work. He should at least be fitted to go on with the more advanced operations which are intended to give him greater facility, and show him how the various methods may be adapted to varying conditions.

While the hood crown or shell, having its labial surface cut away to expose the natural tooth, is not often indicated, its proper construction ought to be taught; for by the difficulties in its construction will the student be made aware of its weaknesses, and be better able to select such teeth for the operation as will promise success.

In operation No. 8, the student gets opportunity for further practice in the construction of a shell crown and learns how to solder porcelain without investment. In No. 14 he has opportunity to further perfect himself in making a metal and porcelain dummy, and the adapting of the riveted facing under a little different conditions.

In the completed bridge he has opportunity to correct the mistakes of the first one and show progress.

Porcelain Crowns and Bridges.—As there are certain principles underlying the construction of porcelain work, it seems wise to consider it apart from the other work. There seems a growing tendency in the profession to use porcelain, so the teaching of its proper construction is indicated in a complete technic course.

The first principle governing construction is that the metal foundation or framework should possess sufficient strength to withstand all the stress of mastication.

The second is that the bulk of metal should be so placed and distributed that it will give the greatest possible bulk and strength to the porcelain. Third, the attachment of the pins to the metal foundation should be as far rootward as possible.

Fourth, all joints must be in perfect apposition and united with a solder which will not change under the heat necessary to fuse the porcelain.

Fifth, the utmost cleanliness must be observed in every step of the operation.

Sixth, the body should be of high grade, finely triturated and laid in such a manner that it will present a solid homogeneous mass when fused. If all these rules are observed there is no operation which fulfills so perfectly the æsthetic requirements, and when we consider that in porcelain faced metal crowns and dummies, the pins of the facing usually limit the strength of the work and that in many cases it is impossible to provide sufficient strength, we will conclude that the porcelain crown will not fail us in point of strength.

In the construction of the crown for the upper cuspid (operation No. 4), there is illustrated, first, the proper preparation of the root to allow sufficient bulk of body in the linguo-gingival ridge to insure strength in this locality.

Second, the proper shaping of the facing and its union with the dowel post. In the crown for the right upper bicuspid there is taught, in addition, how to construct a cap with two posts in such a manner as to support the lingual cusp. In the joining of these two crowns by swinging in a dummy for the first bicuspid space, the proper construction of the framework of a bridge is illustrated. In the construction of the crown without a band for the right upper central (operation No. 2), the method of procedure, saving the cap, is the same as operation No. 4, and gives the student opportunity to learn the manipulation and fusing of the body before he applies the body to complete the bridge.

In presenting this outline of a technic course there is no claim to originality of method and if proper credit has not been accorded the originators it is because the sources are so numerous that it would be difficult to mention them all. The author, however, desires to express his appreciation of all the assistance he has received from many sources. Detail of method has been omitted because it seems unnecessary to enter into details before such an audience, furthermore the object has been to suggest operations illustrating principles rather than to exploit methods.

REPORT OF COMMITTEE ON PRACTICE.*

By A. R. Cooke, D. D. S., Syracuse, N. Y.

The twentieth century opens with full promise of advancement in both the study and practice of dentistry.

We pride ourselves, with cause, upon the achievements of our first century of existence; we point with pleasure to the development of our profession from a trade of modest pretensions to an honored place in the world of learning.

This report being confined to the practice of the art, we shall limit our remarks to that department.

The practice of any art depends upon an accurate knowledge and application of scientific laws formulated by careful study. In proportion as such accuracy and knowledge are applied in practice, are we carrying out the fundamental laws of our profession. It is, therefore, a great satisfaction to note improvements in instruments, materials and appliançes of precision.

This is an age of precision. The refinements of modern science are truly marvelous.

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*Read before the Dental Society of the State of New York.

Accuracy of statement, of manipulation and of method has been greatly advanced by the investigation of the physical properties of materials in daily use. The preparation of cavities, the instrumentation involved in their filling, and the choice of materials, have received careful attention during the year. Drs. Black, Miller, Williams, Peck, and many others, have added to our knowledge in these lines.

Notable advances have been made in oral surgery, and our specialists in this line are to be commended for the success of their operations. However, it is the opinion of your committee that there is danger of overdoing this class of practice. What have been considered simple operations, involving treatment in the usual course of dentistry, are too often made subjects of surgical operative procedure. It is not that the results are not beneficial, but that the same result might have been secured by proper dental treatment supplemented by the processes of nature.

By all means let us have surgical interference when necessary, but do not let it be carried to the extreme.

The point in question was recognized by the late Prof. Garretson when he said that the "chief aim of his life had become the prevention of unnecessary oral surgery operations."

The "Surgical Treatment of Palatal Defects" was the title of the most important paper presented before the International Dental Congress. Dr. Brophy clearly outlined his present system of operation in this class of cases, and gave a summary of results which is highly satisfactory, and which received unstinted praise from European specialists. The paper in full should be carefully studied by every member of the profession.

This operation, properly performed, promises relief for a class of cases which has long puzzled the medical fraternity, and which has proven a cause of anxiety to the dental specialist in his effort to correct the same mechanically.

Several methods of rapid anæsthetizing and removal of the dental pulp have been presented and are finding acceptance.

The first with which we are familiar consists practically of an injection of cocaine solution into the pulp tissue.

A slight exposure having been secured, the blunt point of a hypodermic syringe is carefully inserted and slight pressure made upon the piston, forcing more or less of the solution into the pulp chamber.

A second method was devised by Dr. W. J. Morton, in which the exposure is secured as before. After removal of the debris from the cavity by syringing with tepid water, an application of cocaine hydrochlorate dissolved in formaldehyde is applied. Over this a small piece of amadou is placed and the entire cavity filled with unvulcanized rubber. Pressure upon this mass of rubber is made with a flat or blunt pointed instrument forcing the solution as before into the pulp. Anæsthesia is complete.

Carbolic acid may be used as a menstruum, the mixture consisting largely of cocaine and having the consistence of thin syrup. From personal experience we can say that the latter method is successful—easily performed and is less troublesome than the use of a syringe.

At the last meeting of the National Dental Association, Dr. E. T. Darby advocated a similar process, substituting equal parts of carbolic acid and chloroform for the previous-named anæsthetics. The exposed pulp is first touched with carbolic, when the blunt point of an abscess syringe is inserted into the pulp chamber and pressure made by means of the piston. This involves the filling of the cavity with temporary stopping around the canula of the syringe. Two to three drops of the solution produce anæsthesia. We shall not discuss the theory of this operation, as that properly comes under other departments.

It is well that the porcelain inlay process has not found general acceptance and practice throughout the State. Like all other artistic operations, it requires, for its successful practice, peculiar ability and a rare judgment in the selection of cases.

The preparation of the cavity, the forming of the matrix, the selection and manipulation of material, and the fusing of the inlay differ much in detail from our accepted ideas of practice and require special training.

That porcelain work in all forms has come to stay, is too trite to dispute, but we are not prepared to accept it as advocated by its extreme exponents.

Porcelain crown work has many advantages which have been ably presented before this society by Dr. F. J. Capon, and before other societies, and in recent publications by Dr. H. J. Goslee, of Chicago. The specimens exhibited challenge the admiration of every one who has essayed this class of work.

The questions of strength, permanence and possibility of repair, demand consideration.

High grade bodies, or more properly high fusing porcelain, is preferred on account of strength and small amount of shrinkage.

Our experience with cataphoresis may be repeated if the fad becomes general.

In this connection it might be well to consider the old quotation "Be not the first by whom the new is tried, nor yet the last to lay the old aside."

It has been reported that second-hand cataphoresis apparatus can be purchased very cheaply—that the process is a failure and should have no place in practice. Be this as it may, cataphoresis finds some adherents who derive substantial benefit for both patient and operator.

If our early efforts in this line had been attended by the more accurate knowledge of the application of the electric current to the teeth which we now possess, we should have had less failures to record. Our instruments, too, would have been constructed upon better principles and would have given more uniform results.

Undue haste to accept anything new which promises easy and quick returns, has been the bane of dentistry and the source of much profit to the instrument makers.

In the last number of our "State Transactions," you will find a paper by Dr. F. Milton Smith, entitled "A Plea for Less of Crown Work and More of Good Gold Fillings." The essay not being read in Convention, received no discussion, although the deductions are pertinent.

It has been said that modern crown work has done more than all else to lower the standard of operative dentistry, and your committee is much inclined to the same opinion.

Certainly no specialty has ever been so much overdone.

Cases requiring care and much time in preparation and filling are so easily treated with ill-fitting, poorly-made gold caps, for which a fair fee is readily collected, that the filling of these cavities with gold is being neglected.

The unsightliness of the gold crown is the least objection to the practice, as your committee considers a well filled tooth with living pulp vastly superior to one with the average crown and possibly putrescent pulp.

I quote the following from the essay in question: "In the judgment of your essayist, with the advent of crown and bridge-work there began a decline in the number of thoroughly good filling operations that has been gradually on the increase, until in proportion to the number of teeth filled, we believe fewer good fillings are made than ever before during our professional life of twenty-five years."

In conclusion of the same paper the following propositions were submitted:

"First. The great number of crowns applied is attributable largely to our inability to do as perfect work as we ought with gold as a filling material.

"Second. There are two principal causes for this inability. (1) Insufficient teaching of the schools, and (2) laziness and indifference after graduation.

"Third. That to do first-class gold filling work is within the reach of almost every dentist who will pay the price.

"Fourth. In proportion as we are able to handle the various forms of gold will success be ours in practice."

Valuable additions have been made to our knowledge of the "Pathology, Chemistry and Therapeutics of Putrescent Pulps," by the investigations of Dr. A. H. Peck, of Chicago.

That hydrogen sulfid is not the only gas developed and that the use of germicides alone is not sufficient in treatment of putrescent pulps, seem proven. We anticipate with pleasure the continuance of these experiments and hope for accurate knowledge upon which to base intelligent treatment of these cases.

Dental prophylaxis is receiving more general attention in practical ways. If we are to accept the conclusions of Dr. Black that caries is largely a matter of environment, how important this subject becomes. The question of local cleanliness is to be advanced by the advice of the dentist, supplemented by the care of the patient. Every factor in tooth environment should be carefully considered in our attempt to establish prophylaxis.

The saliva being the prime factor in the causation of decay, demands more accurate examination. The paper read at the last International Dental Congress, by Dr. Michaels, of Paris, throws new light on this subject. "Sialo-Semiology: Analysis of the Saliva as an aid in the diagnosis of Diathetic Diseases and Gingivo-dental Changes" is the title of the paper, an abstract of which appeared in the December *Cosmos*.

By series of experiments he has demonstrated that immunity from caries is directly dependent upon the systemic conditions which cause a variation from normality in composition of the oral fluids.

From meager notes at hand we are unable to draw definite conclusions and await the publication of the paper in full with anticipation, and recommend a general study of the same.

The practical application of this study must come to our aid in the intelligent treatment of the future.

In conclusion of this brief report, I quote the following from Dr. C. E. Kirk as bearing upon this point:

"The problem which still confronts us, as it has from the beginning, is the prevention and cure of dental caries. The art of dentistry, elaborate and ingenious as it is, has not furnished a satisfactory solution of this perplexing question. The filling of carious cavities in human teeth by the insertion of metallic restorations and various mineral compositions, notwithstanding the consummate skill and artistic perfection with which it may be done, is not the highest therapeutic ideal of which dentistry is capable. Something more is required of us and must be attained, namely, the development of our special knowledge to the point where we can successfully prevent the bacterial destruction of tooth structure.

This is the problem which the science of dentistry must unfold, and the end which it must furnish the means to attain."

PRESIDENTIAL ADDRESS.*

By W. MITCHELL, D. D. S., LONDON, ENGLAND.

Friends and Members of the American Dental Society of Europe:

I heartily welcome you to this, our twenty-eighth anniversary, and am pleased to see so many present. The innovation of holding the meeting during Eastertide this year, instead of in August, as heretofore, is an experiment on the part of the Executive Committee to comply with the ideas and wishes of many who hitherto have found that the summer meeting encroached too much upon their vacation. There is no doubt but the Executive Committee will be guided to a great extent by the success of their initial effort, as to its continuance. I feel assured whatever is for the best interests of our Society will receive their most careful consideration.

So soon after such a wonderfully successful meeting as the third International Dental Congress, held last year in Paris, it would seem that we would hardly have had time to digest the papers and work done there, or to prepare much in the way of papers or clinics for this meeting, but I feel sure you will all agree that our members have responded nobly in this direction and I wish to thank all who have contributed to our program for their kind consideration and co-operation. There can be no doubt as to the benefits we shall all derive from the papers read, and the discussions thereon, as well as from the methods demonstrated to us at the clinics.

In connection with the work of our Society I wish to suggest to the Executive Committee for their consideration the appointment of committees, to report at subsequent meetings, in respect to the salient points of our literature during the preceding year, and upon advancement made in the chemistry, materia medica and therapeutics of our profession, and also in respect to new appliances, inventions, and methods of practice. If the selections as to the constituents of the committees are carefully made and these subjects presented, as they may be, in a concise and methodical way, they will prove of great value to all attending our meetings. This idea is not an original one with me, but one which has been in vogue in many societies in the United States for some considerable time, and where tried has demonstrated its advantages, so I therefore urge its careful consideration.

Last year we were entertained by one of the best papers I have ever listened to. The crystallized way in which Dr. Daboll marshalled the historical facts of our profession was a treat such as has been enjoyed by but few societies. Where so much was presented, it was only natural that the broad subject of dental education, and its position in the arts and sciences could only be touched upon.

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* Read before the American Dental Society of Europe.

In the hope of being able to present a few ideas that may merit your consideration I approach the subject, which in its broadest sense is the reason of our presence here to-day. Dentistry has, during the lifetime of many present, practically risen from a chaotic embryo of ill-assorted empirical methods, which made our calling the happy hunting ground of the shameless quack, to a position meriting in a great degree public confidence as well as recognition among the learned and scientific callings of our time. The career of our profession has been a unique one in many respects. It has had its epochs and eras, it may be said of it that it has had its dark and middle ages, which have been the crucible in which its fundamental principles have been refined until, to-day, we possess in our teachers and institutions of learning and all that emanates therefrom the crystallization of ideas, principles and methods which should govern our calling in its practical essence.

The stimulus of college life is evidenced by the development of the incentive to meet our colaborers for the exchange of ideas, and the discussion of means to ends, which, if carried out in the right spirit, will help us return to our homes and practices better prepared to meet the many exigencies we may be called upon to contend with.

This boon which we to-day are enjoying has not always existed. When our calling was in the hands of the blood-letters and barbers, their striped poles were the equivalent of the glaring "Institute" and "Company" signs of to-day, their pretensions and chicanery showed the same earmarks, which may to some extent confirm the theory of heredity as differentiated from that of evolution. Step by step advance was made, through individual efforts rather than by systematic and general action.

Before colleges were instituted, it was by no means easy to learn how things were done by men having reputations in certain directions. They jealously guarded their crude secrets, which undoubtedly contained the germ of the practical application of undiscovered scientific facts. There can be no doubt this churlish lack of confidence in a fellow-worker prevented the elaboration and working out of the possibilities of many ideas for the loss of which to-day the world is probably the poorer. I am sorry to say in some quarters this condition is still not entirely an unknown quality.

As time went on a few earnest spirits, combining, exchanged ideas and methods, progress resulted; little by little the movement grew, societies were formed, literature budded forth, institutions were founded, and the line between empiricism and science became more definitely defined, so that to-day we are enjoying the benefits of the efforts of the pioneers of our profession, which will cause their names to be cherished and revered as long as time shall last. We have heard much of late as to our dependence upon medicine and the necessity of preceding the course of dental instruction by that of one in medicine. By all means, let those who enter our profession be well educated, both generally and specially, but just *how* a *thorough* medical education will improve their dentistry is somewhat difficult to understand.

Let us for a moment linger and see just where we stand in our relation as a profession to medicine, and where our profession would have been had it relied upon medicine as a basis for its success.

Dentistry, as a calling, or profession, whichever you prefer, has a reputation at once unique and unparalleled. As a recognized specialty it is much less than a hundred years old, whereas medicine, which by the way is antedated by surgery, is antiquity itself by comparison. No profession, calling, or the progress of any science, electricity *possibly* excepted, has made such rapid advancement as dentistry, and this in the face of no little opposition from the very profession of which it is suggested it is an offshoot. During the experience of men now happily with us, dentistry has evoluted from an ignorant, empirical handicraft, associated in many cases with legendary superstition, to one of the foremost humanitarian necessities of the present day. It has evolved its own methods, developed its own means in the production of its special appliances; in materia medica and therapeutics it has made its own special advancement, in microscopy it is in no wise behind any specialty of the healing art. In chemistry it has delved, and in metallurgy and ceramics it practically has a special field to itself, and last, but by no means least, its societies and press is not overshadowed by that of any other calling.

Dentistry is essentially a practical combination of science and art, and most decidedly more closely allied to surgery than to medicine. I have said that surgery antedated medicine, and anæsthesia, upon which surgery so much depends for the success of so many of its operations, antedates surgery; for are we not told that "The Lord God caused a deep sleep to fall upon Adam, and he slept?"

To dentistry the world owes a debt of gratitude, inasmuch that two of its practitioners were the first to demonstrate the anæsthetic advantages of nitrous oxid and sulphuric ether; and the names of Wells and Morton will go down the vistas of time in the memory of our profession as courageous and earnest workers, in a field where medicine hesitated, or had not dared to tread. This was not due to rash temerity, but was the outcome of logical reasoning, and a close study of means to ends, evolved through the regime incidental to the demands of everyday requirements. This movement on the part of a few to make dentistry the tail to the medical kite is, in a way, not new. In fact there is nothing new about the proposition, it is simply a different way of presenting an idea which has cropped up here and there at different periods, which at once stamps the disease as sporadic, and one not likely to become epidemic.

The history of these movements show them to be evolved from ignorance of the situation, and the incidental insufferable conceit that invariably accompanies an intellect suffering from a lonesomeness of ideas. Who are these people, what is their record, and what is the proposition they present, that we should complacently stand aside while they dictate as to the educational, ethical, and social requirements of our profession?

I think you will all agree with me that the last International Dental Congress was a representative gathering. At one of its sessions a proposition was put forward, voicing the sentiment of a few men from the continent of Europe, Great Britain and the United States, who wished to see the dental curriculum prefaced by a *thorough* medical education. The sponsors of this movement were a hybrid, practically neither medical men nor dentists; in some cases they were men, who by virtue of their medical degrees were allowed to practice dentistry, without any special qualification for so doing, and yet who, by virtue of said degrees, pretended to be far superior to those whose specialty they had invaded, and to whom they condescended to dictate in respect to a profession, in many instances taken up by them, because of their failure in medicine or surgery.

Right here I would say that in countries where dentistry is in an embryonic condition the medical powers have full executive control of its legislative enactments, medical men are allowed to practice a profession which in many respects they are less qualified to adorn than would be a plumber. (I wish to cast no reflections upon the plumber.)

I would ask if these sentimental gentlemen who have so recently awakened to the real (?) necessities of our profession, have ever done anything in connection with it, outside of making a living out of it, that warrants a serious consideration of their propositions? I say No! As a rule they are scarcely known in their own countries, and certainly have not the name or position that merits a second thought in this matter. In some cases they are very competent, in that they can prepare encyclopædic articles of a theoretical nature, which not infrequently bear eloquent testimony of the difference between *talking* about a thing, and *doing* it.

Surgery and dentistry are to a very great extent exact sciences, combined with art. Surgery and dentistry are essentially *practical* professions, the fundamental principles of each are based upon exact sciences. That part of medicine, preventive medicine, which to-day is occupying the attention of its greatest minds, is based upon hygiene, which is cleanliness. This in turn has its foundation in chemistry, and exact science. Therefore my contention is, that we should have as our sheet anchors a greater knowledge of the *exact* sciences as a basis for our professional knowledge, and *less* of the theoretical and debatable pabulum that we have seen periodically reconstructed, to the student's more or less distress and confusion.

The sciences of natural philosophy, physics, chemistry and metallurgy are *exact*, and are founded upon laws which have always existed, and while some of their principles have long remained undiscovered, it is upon these laws that the universe was formed; and without them worlds would have been an impossibility. Because it has been found that these were essential to the intelligent study of medicine, does it give medicine a monopoly of their use, and an attempt at the absorption of a calling which in an equal degree appreciates their value? Not by any means, and I do not concede for one moment that medical men have a clear perception of our educational requirements, neither have they any right to presume to legislate upon dental matters. This truckling to the vanity of the older profession, and attempt to tack on to the fringe of its garment, in many instances is done by men who lack the capacity and individuality to make a position for themselves, yet are quite willing to snap up the scraps which the medical man condescendingly throws to them, while he can only feel contempt for their servility.

Has medicine or dentistry placed our profession where it is? To this there is but one answer. Of the revered names engraved upon the enduring tablet of our profession's history there are but few with medical training, and had they devoted themselves to surgery they would probably have been even more noted. Those whose names we all know so well, were men of quick perception, good reasoning powers, thoughtful, resourceful, and possessed of a manipulative dexterity and persistency that would have made them masters in many crafts.

The many practical requirements of our profession make it one in which collateral, scientific and artistic knowledge and ability are absolutely indispensable to success.

What other profession makes such drafts upon science and art as does ours? And yet we are asked to prepare ourselves for this by prefacing our *exact* requirements by a more or less empirical prelude. Increase our *exact* knowledge by all means, but delete obsolete methods and all questionable requirements, and those found not to bear the test of time.

There is still much to learn in dentistry, without encroaching very much upon the domain of medicine, and judging by the rebuff the proposition received at the Congress, administered as it was by the leading earnest thinkers and teachers of the United States, who were men having medical degrees and therefore knew of what they were speaking, speaks volumes for the sincerity of their belief, that a medical education is *not* essential to a successful dental career. The opposite to their belief no doubt exists in many minds, in countries where the very existence of some dentists depends almost entirely upon the patronage of medical men, but in the United States, the home of developed and advanced dentistry, with its matchless schools, its vigorous societies and press, things are different. There dentists, and dentistry, hold a place in public esteem accorded in no other country.

The progressive nature of our profession is demonstrated in what it has done for the human race. Dr. Horace Wells, of Hartford, Connecticut, was the pioneer in the use of anæsthetics. Dr. Morton, of Boston, a partner of his, introduced ether, and it was through the energy and influence of our respected friend, the late Dr. Thomas W. Evans, of Paris, that nitrous oxid was introduced into the dental practices of Europe (and incidentally I may add, it is an open question whether he is not entitled to the credit of having made the first vulcanite denture ever worn).

The evolution from radical to conservative practice, to the benefit of those seeking dental attention, is the result of dental ingenuity, not medical knowledge. The replacing of lost organs is the result of the dental application of chemical, metallurgical and artistic knowledge and ability, not that of empirical theories and beliefs.

The success attained by Garretson, Brophy and Curtis, cannot be attributed so much to their medical knowledge, as to their splendid development of manipulative ability and resource, promoted by their intimate association with dentistry.

The pioneers of our profession have handed us down a legacy in the results of their labors; let us take up the burden where they laid it down. We have as confreres on both sides of the Atlantic men who are able, willing and devoted followers of those who developed the possibilities of the broad bases of science and art, upon which our profession has reached its present dignified position; let us join them in a healthy rivalry according to our respective capacities in seeing that its escutcheon is passed on with its historical tablets untarnished, and thereby demonstrate that we appreciate the requirements of our calling, and live up to their exactions, with the assurance to those who have given their life's best thoughts and energies to our profession that their efforts are appreciated by their endeavor to educate dentists, by dentists, for dentistry.

I do not blame medicine at all as a profession for this movement. We, as a specialty, receive the heartiest sympathy and approbation from those who are the backbone of that profession. Medicine has not said here is a jewel that I will pluck from its present setting and add luster to my coronet by fixing it there. I believe that those of the medical profession whose opinion is worthy of consideration, and who *know* what dentistry *has done,* and *is doing,* are quite willing to trust us with the management of our own affairs. It is the hybrid fledglings, the medico-cum-dental specimen, who in his frantic clamoring for maternal sustenance and approbation, has got beyond his mental depth, before he has demonstrated his professional capacity.

The fact that one whose life has been devoted to dental education, and the advancement of all its best interests, and who to-day is the oldest dental educator in the world—I have reference to the venerable and revered Professor Jonathan Taft, of Michigan University—has successfully advised his Regents to advance the dental course of that institution to four terms of nine months each—and these upon *dental* lines—shows that our calling is still safe from the vandalism always associated with limited appreciative capacity, and reasoning ability.

Dentistry has shown that its requirements are of a versatile nature. To make a success of dentistry to-day, a man must have quick perception and application, a good knowledge of the different sciences, he must have an appreciative knowledge of sculpture and painting; in these he will be greatly helped by his study of anatomy and physiology, while the reverse possibilities will be revealed to him by his knowledge of pathology, and studies of a comparative nature. But after all it is the full appreciation, and the practical application of the combined crystallized essence of these, through our fingers, to the benefit of our patients which alone entitles us to public confidence and respect. As the violinist, the painter and the sculptor evolves the soul of his art, through the wielding of the bow, the brush and the chisel, no less may we through the various devices at our command contribute to the health, comfort and appearance of those seeking our services.

The enterprise and progress of the best American schools is shown by their keen appreciation of the requirements of the present day, and the manner in which they have utilized means to ends in the use of appliances of all kinds, to better illustrate and carry out the instructions of the lecture room. The advance in preliminary requirements, and the extending of the courses is evidence that the interests of the public and profession alike are being well looked after, and all this by dentists and not by pseudo-medical men who have obtrusively thrust themselves forward in the hope of making history for themselves, instead of augmenting that already made, on the lines laid down by the pioneers of our profession, with whom the first and only consideration was that they might be of service to their calling.

I contend that no matter how much medical teaching you crowd into a man's career, unless his dental education is begun early and on sound and thorough lines, with *good* facilities for instruction and practice in operating, he will never make a *good* dentist.

The greatest demands upon our services are for reparative measures, and will be for many years to come. This fact renders it imperative that something more beneficial to the patient than a long-winded dissertation upon the cause of their trouble, and the wholesale application of the forceps, as a remedy, be accorded them; and it is with the greatest confidence that we may look forward to our interests being conserved by those who *appreciate* the requirements of the dentist and the public, and who possess the ability, both as dentists and instructors, to adopt and teach that which in their judgment will prove of most benefit to both, and not waste valuable time in surcharging students with problems which would unfit many for the most efficient utilization of their talents.

I would strongly urge that every member of our Society endeavor to appreciate to the full his obligations to his profession, which does not stop at making a living out of it, but requiting it by attendance upon and taking an interest in our dental meetings, and by a liberal subscription toward our current literature. They should contribute to the success of our meetings by papers and clinics, and not shirk the grave responsibility which is theirs by virtue of their position. It should not be a case of all intake and no outgo. There is too much general apathy in the profession in these matters, and every man owes it to himself and his profession to make it all the better for his being in it.

The path of duty is clear. Let it be marked by our unswerving loyalty to our profession, and to its recognized institutions and traditions. I sincerely trust that none of you will ever be borne away by any seductive side wind of personal aggrandizement, and barter the individuality, good name and efficiency of your profession for a plethora of impotent titles.

THE TREATMENT OF DIFFICULT APPROXIMAL CAVITIES.*

By William A. Spring, D. D. S., Dresden, Germany.

Difficult approximal cavities are so universally confined to the bicuspids and molars that I shall limit myself to a description of these, and my method of simplifying them. These cavities may be divided into two classes; those which are so small that one is not justified in cutting through the grinding surface, and those which are very large. Of the first class I shall say but little. Very generous separation of the teeth is necessary, very careful preparation of the cavity, extending it fearlessly, enough to remove all defective enamel, small undercuts from lack of depth, small instruments, great patience, a quiet nerve, a brilliant polish, absolutely free from pits and a tired back are all necessary to one of these places, and I am not prepared to suggest for them any short cut.

Large approximal cavities may be difficult from two causes: First, a narrow point of lateral decay extending some distance beyond the line which would form the natural boundary of the filling. Second, caries so extensive as to reach far beyond the margin of the gum, and render the adjustment of the rubber dam practically impossible. Cases of lateral caries I treat in the following manner: After opening well the grinding surface, and preparing the cavity, I assure myself that the small lateral arm is sufficiently deep and slightly retentive in form. I then adjust the rubber dam, and the matrix. The filling is now exceedingly simple. One pellet of tin and gold is placed into the lateral arm and well pressed home, one or two taps of the hand mallet will secure absolute solidity, and the cavity has resolved itself into a very easy one. Any method may now be employed. I fill one-third with tin and gold, one to six, and finish with cohesive gold. The tin and gold can be placed in a very few minutes, but should be very firmly condensed. A good contour can be best secured by using a depressed matrix, of which that of Dr. Jack is the best. He who has time can make very good ones out of thin steel, by removing the temper and hammering it upon a lead block. I attach my matrix with two wedge-shaped pieces of linden wood, one on each side. Before placing them I dip them into a chloroform solution of Canada balsam. Once placed in this manner they are practically locked.

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* Read before the American Dental Society of Europe.

Large cavities extending beyond the margin of the gum are universally recognized as difficult, and many methods of treating them have been recommended. Some recommend a high heat gutta-percha. Another method much in repute is to fill the part of the cavity beyond the gum line with amalgam, and at a later sitting adjust the rubber and fill with gold. Some have been successful with building gold into the amalgam while it is fresh, using some kind of crystal matte gold to begin with. The late Dr. Marshall H. Webb is said to have been able to put the rubber dam onto any tooth no matter how high the cavity, and to have filled it with the electric mallet from start to finish. I have seen Dr. Young, of Leipzig, construct an instrument of thin steel which made it possible to push and hold the rubber above the margin of a cavity which was much beyond the gum line. It was beautifully done, but required some time to construct and was painful to the patient. While admitting on the evidence of the method just described that such cavities might be filled entire with the rubber, I repeat that for most of us they are practically impossible to adjust the rubber, and I beg to describe my method, which is simple and easy. One has first to contend with hypertrophied gum. Temporary gutta-percha stopping, cotton moistened with sandarach, and cotton moistened with some anodyne have all been recommended. I place a piece of asbestos paper moistened with oil of cloves over the pulp, then a small piece of cotton moistened slightly with carbolic acid against the gum and over this a large piece of cotton moistened with a thickened solution of tincture of benzoin, packing the cotton tightly. This seldom fails to force out the gum in twenty-four hours. The benzoin would keep it sweet if it remained a week. It also makes it nearly as hard as sandarach and never causes pain to the pulp. The cavity should be opened from the grinding surface, frail margins chiselled away as much as necessary, but not filed. Retaining pits are not needed, but care should be observed to have the cavity slightly retentive in form, even the part beyond the gum line. I always use the matrix for these cavities, but before placing it I touch the gum with the smallest possible piece of cotton moistened with trichloracetic acid. It turns the gum white, and prevents moisture of any kind. I then napkin the mouth and adjust the matrix. I disinfect with alcohol, which contains a few drops of oil of cinnamon. This has the advantage of drying very rapidly. I then fill one-third of the cavity with tin and gold, one to six. The pellets, cut one-eighth of an inch long, should be placed side by side, each one reaching the bottom of the cavity. As soon as one layer of pellets is placed as thick as they will easily go, they are all condensed with a large pointed instrument, then given a few sharp blows with a hand mallet. One layer is usually enough to more than fill the portion of the cavity beyond the gum line. The matrix is then removed, the rubber adjusted, the matrix again placed, the gold washed with alcohol and dried with hot air, and the filling completed. I finish with cohesive gold, but frequently put in one more layer of tin and gold before doing so. The connection should be made with some form of crystal matte gold. As soon as filled the matrix is removed, the filling burnished and then polished with thin strips. The tin and gold part of it is so soft and so nearly perfect in form on account of the matrix, that it requires but little polishing, an obvious advantage in time, as well as comfort to the patient. It is tougher than noncohesive pure gold and takes a polish as smooth as cohesive gold. The final polish should be given with finely pulverized pumice on thin linen tape.

I beg to briefly call attention to the advantages of such a filling as I recommend. In the first place, it is a wonderful preserver of teeth. It is soft and pliable, yet tough and strong. In its introduction, no instrument comes near enough the cervical margin to possibly injure it. It is an excellent non-conductor. Being noncohesive, moisture would not harm it, though with the precautions mentioned not one case in a hundred need get moist.

There has been considerable difference of opinion as to whether the tin dissolves. I have been often amused to notice how easily the statement, during a discussion, that tin dissolves, has dispersed all friends and satisfied all foes of this valuable material. One does not like to be connected with a doubtful thing. I shall try to show you gentlemen that the very dissolution of tin in these fillings is an element of strength, and that the enormous toughness of these fillings is due to that fact. Prof. Miller has described very clearly in a pamphlet entitled "Ueber die Combination von Zinn und Gold," that if one sheet of tin and one sheet of gold be placed in a mild solution of lactic acid a portion of the tin is dissolved and deposited upon the surface of the gold. The authority is so good that I esteem it unnecessary to quote further how this is accomplished.

I think you are all familiar how intimate a connection is secured by an electric deposit. Dr. Langbein, a well known chemist, explained to me the closeness of such a connection in the following manner: A piece of platinum was plated with copper, and placed into a solvent of copper. Though the copper was apparently dissolved, it was impossible to so far remove it, that a small clipping of the metal placed into a test for copper did not show the presence of that metal. Dr. Langbein explained that in such a deposit the depositing metal penetrated to between the molecules of the other metal. In a filling of tin and gold, if the two metals are so rolled as to be in contact with each other through the whole mass, the tin is deposited upon the gold as fast as it dissolves.

It is through this process that this combination grows hard. If the conditions are wrong and tin alone is used at the cervical margin, and then gold, a dissolution of the tin would naturally cause a cupping and eventually lead to disaster. This hardening of tin and gold is no idle theory. We have all seen fillings of this material in all stages from one to twenty years old, which were as hard as amalgam. If equal parts are used a harder filling is secured, but six parts of gold to one of tin may safely be used in approximal cavities if covered with cohesive gold, as I have proved by many years' practice.

CROWNS AND BRIDGES, THEIR ATTACHMENT AND REMOVAL.*

By Louis J. Mitchell, D. D. S., London, England.

In presenting this subject for your consideration I do so with the full knowledge that less time and attention has been bestowed upon these two operations than their merits justly deserve; as the bulk of all the literature on crown and bridge work—and it is most voluminous—suggests that after the construction the setting is finally done with cement and the subject is dismissed as a matter of minor importance and with but little thought of the patient's immediate comfort or the necessities that arise for their subsequent removal.

In advocating the use of gutta-percha in preference to cements as a medium for attachment, I have the practical experience of its advantages and disadvantages during the past ten years to guide me in imparting to you the methods I now employ.

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* Read before the American Dental Society of Europe.

It is always our desire and should be our practice to cause no pain or discomfort to our patients—except that it be for their ultimate advantage and benefit—though to bring this about often entails an additional tax both on our time and physical energy, and I contend there is no excuse for the operator who is the cause of needless suffering, and if the fixing of crowns and bridges with gutta-percha had but this one advantage—the absence of pain to the patient—to recommend it, this alone should be sufficient for the members of our profession to at least give it a careful trial. After fixing crowns or bridges with gutta-percha it is not necessary to tell patients that "the pain and discomfort they now suffer will soon pass off and that any tenderness of the gum around the crown that may ensue is caused by the action of the cement in crystallizing," as we have no tenderness or sloughing of the gingival margin when gutta-percha is employed.

It is safe to say that quite 80 per cent and more likely 95 per cent of all crowns and bridges are fixed with cements of various kinds and most of those who are the possessors of these beneficent operations have, in many instances, a painful recollection of the time when these were finally fixed and more especially so if the roots or abutments were badly broken down below the gum.

It is an undisputed fact that all of our cements disappear most rapidly at the cervical margin, yet practically all of our crowns and nearly all of our bands, semi-bands, or other supports for bridges extend to or beneath the mucous membrane; it is also true that when these are properly fitted there is but a very slight line of cement exposed to the disentegrating influences ever present in the oral cavity; yet how often do we find where a crown, set with cement, loosens and requires to be reset that some part of the root has been attacked by active caries, showing, however slight the exposure of cement, it does not escape this influence. On the other hand it is pretty generally conceded that we have nothing that gives such uniformly good results in saving teeth at the cervix and for root filling as gutta-percha.

In proportion as the decay of the root to be crowned extends below the cervical margin, in a still greater ratio is the use of cement to set crowns or bridges contraindicated, because of the pain to the patient, difficulty of keeping the root dry and the knowledge of its liability to rapid disintegration after the work is fixed in position. In these cases gutta-percha obviates the pain, is not dissolved by any physiological or pathological condition of the mouth, and if moisture is present—as is often the case in spite of our best endeavor—the pressure required to force the work home with this semi-plastic medium will to a very great extent expel what little fluid may seep in before the work is fully seated, but if not its presence is less harmful under gutta-percha than under any other filling material with which we are acquainted.

Not infrequently we find a large portion of the cement under crowns dissolved away and decay of the root well advanced. I have yet to see this condition under any crown or bridge set with gutta-percha where care was taken to see that sufficient material was used to *completely* fill the space. Very often the porcelain teeth and facings of crowns and bridges require to be replaced, repairs or additions made to same as evidenced by the numerous articles which have appeared from time to time and the many ingenious devices and methods evolved to contend with this most difficult and unsatisfactory operation when it *must* be performed in the mouth, through the piece being unmovable; except by a longer and more tedious process than the first. The difficulties and annoyance experienced through this state of affairs has been to stimulate a strong desire on the part of our profession for removable bridge work in order to obviate this unsatisfactory condition, as it has been pretty clearly proved to those who have been unfortunate enough to have to remove them that when once a bridge is firmly cemented on it—it is a fixture.

Where these cases are set with gutta-percha the application of a warm instrument to the points of attachment enables the crown or bridge to be removed quickly, easily, and without discomfort to the patient, and the operation thus becomes one for the laboratory, not the chair, and is simplified at once.

When cement is used—for various reasons beyond our control—it frequently sets before we can carry the crown or points of attachment of a bridge quite to its place, necessitating the removal, when this can be done, and resetting, or the needless grinding and destruction of the cusps of the occluding teeth we so often see.

With gutta-percha neither of these troubles beset us, for in the event of the crown or bridge not going to its proper place through too much material being used, the application of a warm instrument to the part will usually enable the piece to be pressed home either by the operator or by the patient in the act of closing; if this does not suffice it *can* be removed and that easily, then removing the surplus gutta-percha, rewarm and again press to place. Unlike cement, gutta-percha does not harden in a few minutes and any little change required in the articulation will be corrected perfectly by the patient in the act of occlusion, thus insuring the patient's comfort practically at once and obviating the "easing" frequently required where cement is used, as cementation allows for no accommodation except by the root changing position in its socket or by the same process in the articulating tooth.

The process I am now using for fixing any porcelain or metal crowns with pin or pins attached is to have the pins approximate the shape of the roots in proper proportion to their size and length, and *fit closely*, as I believe the fitting of the pins and not the menstruum, should be relied upon for their retention, the intervening substance acting more as a root filling and preservative to the root than otherwise.

When the stage of final fixing is reached and crown and pin dried, the pin is barbed as thoroughly as possible to afford a still better attachment for the gutta-percha, then the crown and pin are warmed and a suitable piece of ordinary pink base plate gutta-percha is heated quite hot in a pair of pliers over a Bunsen burner or alcohol lamp and immersed at once for a second in oil of eucalyptus, after which it is carefully formed around the pin and over the base of the crown and so trimmed as to leave but little more than will be required to fully fill and protect the root.

With this done the root face and canal are dried with a solution of bichloride of mercury in ether by the aid of hot air, after which oil of eucalyptus is freely applied in the canal and on the base of the root with a cone of bibulous paper or cotton on a broach. The root is now ready for the crown, which is heated as hot as can be held comfortably in the fingers, when it can be pressed up to place most easily owing to the lubricating effect of the eucalyptus.

It is essential to note, that at this stage, heat is *not* applied direct to the gutta-percha, but that it is softened by the heat conducted to it by the crown and pin which retain the heat sufficiently long to give plenty of time to get the crown fully to place.

Removing the surplus, which should always exist, with suitable instruments, aided by eucalyptus, completes the operation.

Where the foramina are large or not already filled care must be taken not to have too much eucalyptus in the root canal before inserting the pin as otherwise it may be forced through the apex and by this means only am I aware that pain can be caused in setting a crown in the manner described; this, however, is quite unnecessary and the pain incidental to the pressure in the apical space soon subsides leaving no after effect.

At the base of Logan or Bonwill crowns gutta-percha is found most useful if for any cause cement is used for the attachment of the pin. In these cases the gutta-percha is warmed in the same manner and placed over the base of the crown which is firmly pressed to place, then removed, dried, and surplus trimmed off, after which it is ready for setting in the usual way with cement. In fixing all gold crowns I approximate the amount of gutta-percha to be used by contouring it in the inside of the cap, being sure to have rather more than enough to fill the space between the root and crown, knowing this surplus will exude when the crown is in position and only by this exudate am I satisfied that the root is perfectly protected. In case the crown does not go quite to place by applying a warm instrument—preferably a good sized copper ended one, devised for the purpose—to the articulating surface till it becomes quite warm when the patient is instructed to close firmly upon it after which remove the surplus.

The operation is precisely the same in setting the abutments of bridges.

I have found no crowns fit too closely to prevent them being fixed with this base plate gutta-percha which I consider the best for all purposes of a permanent character, but for temporary procedure Hill's stopping will be found very useful and easy to work, but it is only temporary. Where roots are split nothing answers so well to render them serviceable and where vital tissue is exposed between the bifurcation or split edges of roots, I find gutta-percha tolerated even better than where lead foil is burnished over the crack or aperture.

In the last decade I have set about one per cent of my bridges with cement and only in cases of very small, short, conical molars and bicuspids—entire teeth—used as abutments, do I find gutta-percha fail to hold them securely and these cases in my opinion are the ideal ones for cement.

I set no crowns made by myself with cement except those mentioned, and in but very few cases do I set anchorage T's pins or staples with other than gutta-percha.

Where retaining pins or other anchorage appliances are set in roots with copper amalgam, which should not in any case extend to the circumference, it will be found that gutta-percha is the best investment, for where roots require this mode of treatment they are usually of the worst description and require the most exacting protection to save them for any great length of time. Where roots are badly broken down below the gum margin I find an application of nitrate of silver, 20 per cent solution, a most useful preservative in conjunction with gutta-percha and oil of eucalyptus. In the removal of crowns or bridges the application of eucalyptus around the cervix just before heat is applied will be found to render this operation easier and is also of great assistance in dissolving away any small particles that adhere to the crown after it is in position.

Time, the greatest and most exacting test, shows that the longer crowns or bridges remain in situ when set in the manner herein described the more firmly they become fixed owing to the expansion of the gutta-percha and also to the fact that it loses, to quite an extent, its resiliency, becoming more dense and less affected by external influences. The manipulation of gutta-percha is easily acquired, is quicker, usually obviates the necessity of an assistant, and occasions neither undue haste by setting too quickly nor waste of time in setting too slowly and I feel sure if you will but give it a fair trial you will forgive me for occupying so much of your valuable time in again presenting this subject for your discussion.

PORCELAIN ENAMEL INLAYS.*

By N. S. Jenkins, D. D. S., Dresden, Germany.

At the meeting in Dresden, five years ago, I made the first public announcement of my experiments in the direction of finding an improved material for inlays, and from time to time since then have kept the Society informed of my progress in this direction. It now seems proper that I should again recur to this subject, since I am now in the possession of a ripe experience, the results of which I prefer to lay first before you, since among the members of this Society I have found, from the beginning, a degree of sympathetic interest which has greatly encouraged me in my investigations.

No man can premise, when beginning such a work, whither it will lead him. He can only go on, with an unprejudiced mind, willing to accept facts as he finds them, and let the consequences and inferences deducible from these facts take care of themselves. The difficulties to be surmounted on the way toward perfection would have appalled me, had I realized them at the beginning. Fortunately I have had at my side a helper, in a member of my family, whose capacity for continuous, exact and methodical work, extending over thousands of experiments, with never failing devotion and enthusiasm has made the long task certain of achievement.

The material has been refined and strengthened and the colors made so resistant to the heat of fusing, that now it seems faultless. I do not mean that there may not be evolved, in course of time, a yet nobler substance or a still more perfect method; that would be the arrogance of ignorance and mediocrity. But I do mean that this material and this method is, at the present moment, supreme in its excellence.

Any skillful dentist who will seriously study the system can learn to make operations of ideal beauty and usefulness. Not easily. Perfection is possible, even to the man of genius, only through hard work. But through hard work perfection is here possible to any man of moderate attainments. Certain fundamental principles must first be mastered. Every cavity must be so shaped that the gold matrix can be withdrawn without the least change. It must have perfectly defined and well polished edges. It must have sufficient depth, in proportion to its surface, to give appropriate stability. The matrix must exactly represent the cavity, and it must be laid in its asbestos bed in the melting cup so as to be immovable during the process of fusing. The drying of the asbestos and of the alcohol-moistened powder must be gradual, that no steam of water breaks the asbestos from the platinum cup, and no steam of alcohol makes blowholes in the porcelain powder, which would require undue time and heat to close up. The heat must be slowly raised to the melting point, and steadily held at this point until the desired flow is obtained. At the last the flow must be exactly to the edge, neither falling short of nor exceeding the line, no matter how many packings and meltings may be necessary to absolute exactitude. It is a feminine material. It can be coaxed into going where you wish, but it cannot be driven. The matrix must be carefully stripped off, and the fit proved. If thus far all has been done exactly the inlay will appear to exactly fit the cavity. The removal of the matrix seems to leave no space between the inlay and the wall of the cavity. It may be that the removal of this thin and evenly distributed film of gold enables the inlay to sink into actual contact with the walls of the cavity; certainly it leaves no apparent space through which the dissolving out of the cement would be possible. Years after such inlays have been set in teeth of moderately good structure, a powerful magnifying glass will show no line between inlay and tooth, and no evidence of cement can be seen at the contact. Of course there are teeth of such depraved structure that no filling will permanently preserve them from recurrence of decay, but even in these teeth reasonably good health seems more prolonged under this system than under gold.

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* Read before the American Dental Society of Europe.

And this brings me to my first conclusion, one which I assert with diffidence, but which seems to me well established. The perfect inlay is superior to a gold filling, in a considerable majority of cases in tooth preserving qualities. Firstly, because in preparing a cavity for an inlay by the complete obliteration of undercuts and gaining access to all parts of it, every particle of diseased dentine can be reached and removed. Let any dentist prepare an obscure cavity for a gold filling and then, when he is satisfied with its condition, change his plan and prepare it for an inlay, and he will almost invariably find that he has left some diseased dentine in the first instance, which would have been detrimental to the filling. Secondly, because before setting in the inlay, the operator can be sure if he has made a perfect operation. Nothing is left to chance or to the imagination. No finishing reveals pits or blemishes which it is too late to repair. No gum margin has to be polished when the operator is fatigued, and the patient and the gum unite in weeping, and there are no chipped edges, or cracked walls caused by a false blow of the mallet. Thirdly, the inlay is more easily kept clean than gold, both by reason of its unchangeable surface, and because it so protects the pulp from thermal changes that the patient does not fear to use the tooth-brush.

Another of my conclusions has been an unexpected one. I have found inlays adapted to a greater number of cases than gold or any other single filling material. In the beginning I looked upon them as especially suited to the front teeth and to visible cavities, purely upon æsthetic grounds, as is probably the case with nearly all dentists to-day. I have come to regard them as the most desirable fillings in nearly all positions in the mouth. Especially in compound approximal cavities in bicuspids and molars are they to be recommended. The shape of these teeth can be so perfectly restored, and the contact of exposed fillings so admirably accomplished, and the gum margins made so exactly, that there seems to be no good quality wanting to this work.

I am aware that to some it might seem to savor of unreasoning enthusiasm when I declare that the perfect inlay is always superior to gold wherever the perfect inlay can be made. but here I am speaking to men who know me and know my practice. The members of this society are like the members of one great and distinguished family. Owing to our position in Europe, and to the fact that many of our patients are moving frequently from one European city to another, we keep in touch with each other's methods, and know each other's work, as cannot be the case with the members of any other society. We may therefore speak frankly of things which, under other circumstances, it would seem indelicate to mention.

You all know upon what a solid gold foundation my practice has been founded. If, therefore, you hear that it has become a rarity for me to make a gold filling, and that my partners, Dr. O'Brian and Dr. MacBride, make a large proportion of all their fillings of porcelain enamel, you will understand that a practice, so conservative has not been lightly revolutionized, nor for an insufficient reason. It has come about by a process of evolution. We should not have deliberately imperilled such a practice by an abrupt change, nor have persevered in a new method of practice, had we found it disadvantageous; but by a perfectly natural process we have developed into a method which is, to us and to our patients, a prodigious improvement over that of the past. Fortunately our patients have been trained to expect the best services at any reasonable expense, and they have taken kindly, and indeed with enthusiasm to an improvement so great, although it has to be compensated for by larger fees.

I believe, therefore, that my practice is but an epitome of general practice. Dentistry is standing upon the threshold of a new era. The day of elaborate gold operations is passing away. Many of you may live to see the time when it will be a confession of incompetency to make gold fillings anywhere but in exceptional cases, and when to be a specialist in inlay work will be a higher claim to fame than was ever the case with a master in the use of gold. This will be advancement, not retrogression. Even the patient will be able to distinguish between the work of the artist and the mechanic, for the art which conceals art will be the standard of the future.

I believe this advancement will now be rapid. Whatever is for the ultimate good of the patient is certain of general adoption. I am reminded of a colleague who, pressed by the exigencies of a large practice in which he had no assistance, and being obliged to make daily a number of temporary operations to get through with the work demanded of him, saying, that he disapproved of inlays, because those patients for whom he had in the beginning made a few would now have no other fillings.

And this brings me to the practical question, Will this work pay? Certainly it is my experience and, so far as I know, the experience of all others who have once mastered this method, that there is no sacrifice which nearly all patients will not gladly make to secure the advantages of this treatment. It is economical of material, since the gold used in making matrices is not lost, but remains worth its weight in gold to the dentist. If these operations consume more time for him who has not an assistant to do the fusing, at least much of the work is done outside the mouth, and is far less exhausting than is gold work. In any large practice it makes it easier to divide the work into specialities, which is usually an advantage to both operators and patients.

And now a few practical hints as to making this work perfect. Too great care cannot be taken to get the edges of the cavity not only smooth, but well polished. This may often be done to advantage with small Arkansas stone points, the most useful of which are round, cone shaped or barrel shaped. These should be kept in different sizes and used only when the rougher work of shaping the cavity has been accomplished. All the edges and margins should be polished in this or some other efficacious way, and indeed the whole surface of the tooth, should it be rough.

The taking of the matrix is made yet easier, and the edges made still more exact, by adopting the method suggested by Dr. Carl Elander, the editor of the Swedish journal, *The Reflector*. He forms the matrix in the usual way with pieces of amadou, which he then removes and substitutes pieces of chamois skin, with which the final pressure is made, and under which the edges are burnished. Dr. O'Brian uses agate points for burnishing, and finds them superior to steel.

It is seldom that gold foil of a greater thickness than number thirty need be used. In almost every cavity a matrix of this thickness can be removed, with a little finesse, without the least change. Sometimes it is well to anneal the gold foil before using it. This gives a more rigid matrix, and facilitates its removal from complicated cavities, but ordinarily it is better to use the gold foil unannealed.

The cavity is better prepared under the coffer dam, but the matrix can usually be better taken without the dam, especially in approximal cavities, where one needs plenty of room to get a perfect impression of the gingival margin. In these cases the smearing of the gum and cavity with a thin layer of vaseline is much to be commended.

When the matrix is properly imbedded in the asbestos paste, it is perfectly secure. No number of meltings will draw it out of place. It is futile to mix plaster or marble dust with the asbestos. Simple powdered asbestos answers every purpose.

Porcelain enamel flows slowly, as is most necessary in securing contour, and so sometimes it objects to going into a deep corner. To facilitate its flowing into all parts of the matrix, Prof. Julius Witzel recommends making small isolated points at different parts of the edges at the first melting. These points remain stationary and facilitate the even flow of subsequent meltings.

The inlay should be dovetailed with a small diamond disk. No method of roughening the surface by chemical means is so efficacious. For this purpose a variety of small diamond disks should be on hand. The tendency of the manufacturer is to make these small disks too thin, and not to load them sufficiently with diamond dust. If the disk is too thin, it makes too narrow a groove for the cement to obtain sufficient hold. If it is not well charged with diamond dust, it soon becomes worthless. I am aware of the difficulty of making, for commercial purposes, really superior instruments of this nature, but I would point out that an inefficient implement is not cheap at any price.

Before setting the inlay it should be inspected with a magnifying glass to see if there are any overhanging edges. If so, they should be removed, and this is generally most easily accomplished with a small sandpaper disk.

There is sometimes a slight inequality caused by the inlay being too high. If necessary, this can be remedied by lightly polishing with sandpaper or an Arkansas stone, but often a little inequality is of no consequence. Such an inequality shows most plainly in an impression of the mouth, and gives rise to the suspicion that the fit of the inlay is imperfect; but upon inspection of the tooth this is found not to be the case.

Last of all, the setting of the inlay is of great importance. It is true that the ideal cement has not yet been discovered. It should be a strong, colorless and insoluble cement, such as the researches now being conducted by so many chemists may be trusted in due course of time to bring forth. But for the present we must content ourselves with oxyphosphate as the best material as yet discovered. I have found Harvard cement, as it is now especially manufactured for my system, of high degree of excellence. The powder is finely ground, which is a matter of great moment, and is reasonably free from impurities, as dust, etc., and the fluid is decidedly cohesive. I believe it would be a safeguard if the bottles were provided with ground glass stoppers.

The cement should be mixed to a consistency suitable to the case. For a large, deep filling, the cement can be taken thicker than is admissible in a shallow cavity, where only a gentle pressure can be laid upon the inlay in order to press out the surplus. But it is in all cases of great importance to press out every atom of the surplus cement. This can be done with various appliances, as wooden points, tape or ligature silk, and the pressure must be gently but firmly maintained until the inlay is perfectly in its place, and continued until crystallization has begun. Then the patient will have obtained the most perfect filling the world has as yet seen, at the cost of the lightest strain upon the vital force of patient and operator.

TREATMENT OF CHRONIC FACIAL NEURALGIA BY THE EXTIRPATION OF THE NERVE IN HEALTHY TEETH.*

By J. R. Da Silva, D. D. S., Paris, France.

In giving the title of "Treatment of Chronic Facial Neuralgia by the Extirpation of the Nerve in Healthy Teeth" to my few remarks, I do not pretend to present to you any new theory or discovery on the treatment of the above ailment, but simply to state facts on a few cases that have been treated by me.

Madame S., aged fifty, had been under treatment for five years in the hands of a specialist for nervous diseases, suffering from chronic facial neuralgia, left side; treatment consisted of being kept continually on the move to various watering places, traveling south, etc., etc., in the winter. She would sometimes come in to see me with tears in her eyes, and would say, "For God's sake, extract the molars I have left on that side." (I will here remark that the second bicuspid and first molar were missing.) Teeth remaining were perfect and presented every appearance of the highest health; no discoloration and no soreness on pressure, no local pain, and gums healthy. I resisted her pleadings for some time and began to study the case; diagnosed it as "Odontalgia Nervosa"; during the catamenial periods, pain increased a great deal, always in the upper part of the face and temporal region. I informed the patient that I would extirpate the nerve from one or both molars before deciding to extract them; drilled into the wisdom tooth and made an application of arsenious acid, sealing the cavity with gutta-percha; the next morning patient walked into my office with her arm extended, grasped my hand and said: "You have cured me." I was delighted, of course, but said, "It is not yet finished; wait a few days more." I opened up the tooth and to the best of my ability cleaned out the root canals. In a week's time the tooth was filled and patient never again suffered from her facial neuralgia.

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* Read before the American Dental Society of Europe.

There is no doubt in my mind, gentlemen, that the above case had its indirect associations with the uterus, as the critical time or change of life was approaching its end.

Madame U., aged forty-five, had been suffering for some years from an almost continuous pain in the anterior right side corresponding to the upper canine fossæ up to the eye; the latter seemed to be always half closed and the lachrymal gland giving forth a continual flow of tears; there was also an increase of pain and flow of tears at the periods corresponding with the catamenia; first bicuspid nerve had been destroyed many years before, and tooth seemed to be in a healthy condition; found canals properly filled; patient told me her former dentist wanted to extract first bicuspid and canine for her (canine had a very small gold filling), but she said she could never consent to such an operation, as she was sure she would lose her eyesight—that was her great preoccupation. I immediately assured her that I would never extract her teeth, but that she would have to allow me to extirpate the nerve or nerves out of these teeth. I began with the canine; applied rubber dam, drilled into the tooth, and after having made an injection of "odontunder" took the nerve out and filled up the canal immediately. I would mention here that for the last few years I always extirpate and fill at the same sitting. Relief was not immediate, but after a few days pain gradually decreased—massage being recommended in this case—patient is cured, the eye has regained its normal looks and lachrymal gland is on its good behavior once more. Again I say, gentlemen, that the above case can be traced indirectly to the uterus and the change taking place at that time of life.

Will cite a case in my own family, an aunt of mine—age thirty-four—during pregnancy of her fourth child, suffered most excruciating facial neuralgia on the right side, terminating at the median line. The canine on that side had a large gold filling. She insisted on having it extracted, which was done by her dentist; there appeared to be some relief, but only to begin again with the same intensity at the periods corresponding with the catamenia. In the meanwhile I was corresponding with her and her dentist. The pain seemed then to be located in the right central incisor; she was bent on having that tooth also extracted. I advised, before going to that extreme, to drill into the tooth and extirpate the nerve *seance tenante*. I do not know how it was done, she being 2,000 miles from me, but I had the gratification of knowing that she had been relieved and the tooth saved, and I firmly believe that the canine might have also been saved had the above treatment been resorted to instead of extraction. There is no doubt in my mind that the above period of suffering would have ceased after the period of gestation, but can a woman be left to suffer five or six months without endeavoring to give her relief? I say five or six months, because to my knowledge it is very seldom that a woman suffers in the above manner before the third or fourth month of pregnancy.

What conclusions are we to draw from the above ailments and results? That there is a wide field for physiological study and treatment by the future dentist in order that he may thoroughly understand what he is about, make the proper diagnosis and arrive at a successful result. We are walking in an old rut that has been dug for scores of years by good men, yes, by shining lights in our profession, whom we are anxious to imitate or surpass in putting in the inevitable gold filling or beautifully made crown. Let us study further, gentlemen, and endeavor to abstract from the human frame further knowledge, that we may be in a position to cope with these complaints successfully. By so doing we will not only give relief to suffering humanity, but elevate the status of our profession and place it on a higher pedestal.

Gentlemen, I would like to have you discuss the subject and hear your verdict on the matter. Are we or are we not justified in practicing the extirpation of the nerve in such cases from healthy teeth in the endeavor of giving relief to our suffering patients, rather than resorting immediately to the forceps, as it has often been done, or continue to listen to our patients complaining, visit after visit, and after a thorough examination, finding no decay, simply saying to them, "I can find no cause for your suffering, and can do nothing for you. You must see a specialist for nervous diseases to treat your facial neuralgia"? I say, gentlemen, we are the specialists in the majority of these cases and we must endeavor to become more so. Mr. President and gentlemen, I must thank you for your kind attention, and beg to say that I have come before this honored society, not to expound any dogmatic ideas or theories, but in search of light.

ON THE CHOICE OF METHODS AND MATERIALS.*

By Charles W. Jenkins, D. D. S., Zurich, Switzerland.

In this paper I do not presume to lay down rules for the choice of methods and materials in dentistry, but to indicate the principles upon which such choice should be made. Whoever relies wholly upon rules in the practice of our profession, instead of constantly consulting principles, will at times find himself lost in a confusing crowd of exceptions, if not led far astray on the road to failure. Yet to apply principles correctly requires more thought and discrimination than to apply rules. It is quite as much this necessity as that of skillful manipulation under difficult conditions that makes dentistry a wearing profession.

Taking it for granted that the ideal of a perfect operation is never to be left out of sight, I barely mention the initial necessity of providing the very best materials that dental manufacturers furnish. No inferior brands should be kept in the office; inadequate appliances should be rejected; the test of thorough practical adaptation should be rigorously applied. Yet do we not all know that the best-appointed office does not ensure good workmanship? The best materials are the worst, when out of place. The finest skill may be misapplied. The most complete equipment may be ill used, not from lack of skill or conscientious intention, but for want of judgment. Indeed, equipment, skill, judgment and conscientiousness may be all present, yet failure result, from want of alertness which allows routine methods to take the place of special design at a critical moment.

Both as to methods and materials, exclusiveness on the one hand and haphazard choice on the other, are to be sedulously avoided. It would be generally acknowledged a mistake to fill all teeth with oxyphosphate, amalgam, gold, or porcelain; yet while few practitioners approach this extreme, there are many who reject one or more of these, confining themselves almost exclusively to one, to the limitation of their usefulness as saviors of carious teeth. I have seen patients whose teeth have been admirably preserved for many years by the exclusive use of gutta-percha and soft gold; but I have also seen, from the same skillful hands, failures that were unnecessary, which the use of amalgam or cohesive gold would have averted. More frequent is the exclusive use of cohesive gold. It is a disregard of scientific principles to use this material in every case where it is mechanically possible. The ideal dentist can and ought to perform wonders of manipulation with cohesive gold; but his mission is not to work miracles for display, but to save teeth, even if he has to work miracles to do it. The miracle may be in the line of a brilliant operation, or it may be equally praiseworthy in the line of self-restraint, as when a capable manipulator of cohesive gold is content to use another material because his judgment declares that it will best preserve the tooth.

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* Read before the American Dental Society of Europe.

The opposite error of haphazard choice, of falling into habits of mere routine, of doing what may most readily accord with the mood or convenience of the moment, is equally subversive of good practice. Eclecticism, to be justified, must be intelligent. Choice should be prompt, but not hurried, undue haste being as fatal in dentistry as in all things else. Moreover, it is dangerous to take the pace from one's colleagues. The "all-round dentist" is not he who tries to do everything as fast as his fastest rival, in just the way that has made his most celebrated colleague successful, but it is he who makes the most careful study of the varying needs of his patients; who most carefully chooses the best for each case, with due regard to his own personal limitations. To illustrate: There are many systems of regulating teeth. There is not one of those held in repute which is not worth study for its ingenious application of principles. To wholly exclude the applications of any one is an error; to adopt any one, without deliberation, even in a single case, is a greater error; to confine one's practice to a single system is a distinct loss; and to study only the systems of others, without studying one's self to learn what succeeds best in one's own hands, is sometimes fatal. He who can accomplish almost everything with wedges and ligatures should not despise those more complicated mechanisms which are sometimes the most certain, speedy and merciful of all expedients.

I cannot begin to cover the ground suggested by my subject in one short paper, but will touch one other phase of it in closing.

What should be the attitude in choosing among the new methods and materials suggested by scientific experiment? More especially does this question press hard for an answer when the reports of laboratory research are at variance with the observations of a lifetime of practice. Here again no rule will serve. If the dentist throws aside the results of a long experience, even though the isolation of factors cannot be as thorough in the mouth as on the experimenter's table, he is certain to be a loser. Yet if he sticks stubbornly only to those facts which he knows from daily contact with them he will reap but a limited success. No man is keen-sighted enough to gather all the facts under his nose; we all miss some, and we must welcome help from all quarters. Let the ambitious dentist keep an open mind, remembering that new light is forever shining upon this blessed world. But let him also remember that the best aid in choosing among new methods is the faithful study and manipulation of the old. The X-ray of modern research is penetrating much that has been hitherto obscure; let us welcome its help, while we hold fast the methods which we have found successful when applied with skill and thoroughness.

A SHORT HISTORY OF IMMEDIATE REGULATING.*

By L. C. Bryan, D. D. S., Basel, Switzerland.

Mr. President and Members of the American Dental Society of Europe:

Having been requested to present a paper for this meeting, I do not think I can do better than to call your attention to a history of the "Immediate Method of Regulating Certain Teeth Difficult of Treatment with the Usual Methods," and the succeeding improvements which have been made in this operation since the year 1892, when I read my paper on this subject before the Society in Basel. The paper was prepared for the Heidelberg meeting in 1891. I sent a copy to Dr. Gysi, in Zurich, and Dr. Cunningham, in England, asking Dr. Cunningham to write something to open the discussion. I asked him at that time to let me know if there was anything relating to this operation in English dental literature. He replied that he knew of nothing similar having been performed or published in England or recorded in English works on dentistry. He prepared a paper practically for opening the discussion, and discussing at the same time the suggestion regarding the possibility of the stretching of the nerves, etc., raised in my paper. He also referred to the practice of torsion, or twisting of a tooth on its axis, which has been performed in England, but referred to no case of immediate regulation, of bringing a tooth into line as proposed in my paper. His communication was more than twice the length of mine, and the Committee decided that it would be impossible to give time to both my paper and the paper opening the discussion by Dr. Cunningham, and providing time for the discussion of such a new and revolutionary method of operation on irregularities. At that time I proposed to lift the outer alveolar wall to provide place for moving the tooth out into line, and presented a forceps constructed for the purpose of bringing the tooth in place after the alveolar wall at the neck of the tooth had been broken or lifted bodily out. My paper was afterward read in Basel in '92 and Dr. Cunningham, who had become interested in the subject, and operated on this line for two years, in 1893, at the Dental Congress at Chicago, presented a paper entitled "Luxation; or, The Immediate Method in the Treatment of Irregular Teeth," and in a footnote on this he says: "The present communication is an extension of one forwarded to the American Dental Society of Europe in 1891, simultaneously with one from Dr. Bryan. Neither paper was read. Dr. Bryan altered his communication, which was read in 1892; mine, by advice of the committee, was not presented, and therefore never published." It would seem by this that he claims a simultaneous proposal to regulate with forceps, as I had suggested.

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* Read before the American Dental Society of Europe.

In my old established practice in Basel, where patients for generations have been in the hands of my American predecessors for half a century, I seldom have a case requiring this operation. The most of those I have done have been sent to me from other practices. I have written little on the subject since '92, and have not called the further attention of the profession to this method, but we who perform it have made some improvements and changes in the mode of carrying it out. One of the most important of these changes was suggested by Dr. Cunningham, where he, instead of lifting up the outer alveolar wall, makes two parallel cuts through the margin of the alveolus and brings the tooth out with the outer alveolar wall intact. He accomplished, with his parallel cuts with the saw, a model of which I herewith present, the same which I accomplished with wedging the outer alveolar away, and the operation is a much neater one than at first suggested by me. Dr. Cunningham's large experience with this operation since 1891 and his bringing it before the profession on so many occasions, with his beautiful drawings and dark-lantern slides, has, I hope, made all those present familiar with the operation in all its details. My contribution to the recent improvements in the operation is to put the whole jaw in which the irregular tooth stands in a rubber splint or a thick plate covering the whole of the upper or lower jaw, on which the tooth is to be regulated. Over the region of the irregular tooth sufficient rubber is cut away to expose the tooth and allow the application of one beak of the forceps to the irregular tooth and use the outer buccal portion of the plate, strengthened by a steel brace or strengthener vulcanized in the plate at a convenient place, to support the outer beak of the usual Bryan regulating forceps. I also insert a plug of soft rubber between the beaks of the forceps, resting and pushing against the point of the tooth to be regulated so as to prevent elongation. With these two improvements on the first plan of operating suggested in my paper, we have a very safe, stable and convenient apparatus for treating these cases. Dr. Cunningham has no doubt convinced the most of you of the practicability of this operation and its superiority in those cases adapted to it, over the slow method of operating. I believe, therefore, that this operation will meet with more success in the hands of the inexperienced when we get, instead of my forceps, which are generally used, a screw appliance, which will move the tooth gradually and quickly and be thoroughly under control, which is not the case with the forceps as much as would be the case with some mechanical contrivance which would secure the crown of the tooth in a firm grasp and bring it out steadily under control, as a cork is drawn from a bottle with the lever corkscrew, instead of the ordinary pull one. I understand that some of the dental profession are at present at work in trying to perfect such a contrivance. I suggested this to Drs. Cunningham and Schaffner several years ago, and they promised me they would study the matter up and try and invent something of the kind. Dr. Terry also suggested this in the discussion of my first paper in '92.

As this was to be a history of the operation, I quote from Dr. C. Rose's paper from the *"Zahnarztliche Wochenblatt* No. 364," *"Ueber die chirurgische Behandlung unregelmassiger Zahnstellungen nach Bryan":* "The surgical treatment of irregularities is a very old method. Already Fauchard (*The Surgical Dentist,* Paris, 1728) suggests that irregular cuspids should be straightened with the Pelikane (old key) and then fastened to its neighbors with wire. Also Bourdet ("Research and Observation in All Departments of Dentistry, 1757") uses this method. La Forgue ("The

Art of the Dentist," 1802), on the other hand, rejects the regulation of the tooth with the Pelikane entirely, as well as transplantation.

"Since that time the method in question was entirely forgotten, the more so since the progress of dental technics made possible the manufacturing of proper regulating appliances."

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"In all such cases, the surgical treatment, as Dr. Bryan has latterly perfected them, leads safely and humanely to the object in view. Bryan invented his method without knowing that the same had been practiced one hundred and sixty years before, in exactly the same manner, by Fauchard. In the DENTAL REVIEW, November, 1892, the method has been fully described."

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SOME FURTHER SUGGESTIONS.

This operation strikes one at first sight as rather a barbarous one, and it seemed to create that impression at the meeting in Basel and where I cliniced before this Society, but it is in reality, as Dr. Rose says, a humane operation, if performed under a local or general anæsthetic, when compared with the long-drawn-out regulating operations for just such teeth as this operation is suitable for. We may even compare it with the simple extraction, and it is less painful. Then there are no after pains, the saw cuts and the break in the alveolus on the side of the tooth which has just been moved giving excellent drainage to relieve any periostitis that might arise from an ordinary concussion or injury to a tooth where the periosteum remains enclosed and no outlet for the resulting products from inflammation, such as exudation of serum or blood. There is no recession of gum tissue after regulating. The thick outer wall of alveolus which is carried out with the tooth makes, immediately after the operation, a considerable enlargement above the rest of the tooth, but this, within the course of a few months, is entirely absorbed away and a normal alveolar margin results. In the earlier operations which I performed I lost some nerves, with the elevating of the alveolus and by using elevators and improper instruments and in providing pressure against the crown of the tooth when operating, thus too much disturbing the apex of the root and breaking pulp connections. The loss of tooth pulps should only occur from accidents with the present method of operating.

The circular saw recommended at first in Dr. Cunningham's paper should be avoided as a dangerous, uncertain and impracticable instrument; the saw, models of which I present—my own and Dr. Cunningham's models—are much to be preferred. With a rubber plate brace covering all the teeth, and coming out over the field of operation, an ordinary forceps could be used, but a solid block of soft rubber, such as is used in erasers, should rest in between the jaws of the forceps and against the point of the tooth to be operated upon and pressed by the forceps during movement of the tooth into its proper place. The rubber plate strengthened by the fulcrum should be cut out just wide enough to allow a parallel movement of the tooth into place. I prepare my model of the irregular tooth by taking an impression of the whole jaw, and make my saw cuts on the model as I propose to do in the mouth, and move the plaster tooth into its position as I find correct for the bite, including the protruding of the plaster representation of the alveolus, and then construct my rubber plate on this model with a steel strengthener. This allows my tooth only to move so far as the plate on the model permits, my plate being the guide and limit. When the tooth is brought out against this wall plate, it should be in its place and remain there. I seldom find a retaining plate necessary, and tying the tooth for a few days or hours with silk ligatures is generally sufficient for retaining the tooth, because the coagulation of blood retains the operated parts in place.

FORCEPS.

I present herewith two models of a screw device which will probably be, in a modified form, much preferable to my forceps, which are in general use, after a model furnished by me to Justi, in Chicago. The models which I present are unfinished, and I hope to have suggestions as to modifications in their construction, which may suggest themselves, before having them furnished to the profession. The difficulty to be overcome with the screw appliance, which gives a steady movement to the tooth and prevents the shock which occurs when using forceps, has been overcome by both these instruments which I present here. In a half a turn of the handle, as you see, I get a movement of nearly an inch, and as the furthest distance the tooth is to be moved would probably be one-third of an inch, by a very slight movement of the lever handle we accomplish the movement of the tooth without jar or shock, the movement of the tooth being fully under control. Dr. Schaffner has made four drawings of models and instruments for regulating, to replace the forceps, but the number of revolutions required—the screw propeller is his design—make them unpracticable. Dr. Cunningham has also presented screw appliances made for this, which I have not seen and do not know if they are practical.

In closing I can thoroughly recommend this method *for all such cases as would not yield readily to simple, easily managed regulating appliances,* such as are in general use.

THE TREATMENT OF PULPLESS TEETH WITH SULPHURIC ACID AND PEROXIDE OF SODIUM.*

By S. S. Macfarlane, D. M. D., Frankfort-on-the-Main, Germany.

The treatment to which I wish to call your attention is not new and has recently been called to the attention of the profession by an able article in *Items of Interest* for January, by Dr. Chas. J. Peters, of Syracuse, N. Y.

But I wish to call your attention more especially to the advantages of using the peroxide of sodium in combination with sulphuric acid. You are all familiar with the use of sulphuric acid as it was recommended by Dr. Callahan for opening constricted root canals. Dr. Callahan recommended the use of bicarbonate of soda to counteract the action of the sulphuric acid.

Prof. Boennecken, of Budapest, suggested the use of peroxide of sodium instead of bicarbonate of soda to neutralize the sulphuric acid.

Dr. E. C. Kirk brought peroxide of sodium to the notice of the profession in 1893 as a bleaching agent, and it is for this purpose that it is used on a large scale by manufacturers.

But since peroxide of sodium is a very unstable compound, and readily gives up its extra atom of oxygen, especially when combined with sulphuric acid, and as oxygen in its nascent state is one of the best germicides and deodorants which we have been able to discover, if we use sulphuric acid and peroxide of sodium in combination in a pulpless tooth, we can produce results which cannot be obtained by any other method.

When we are called upon to treat a tooth in which the pulp has lost its vitality, and especially if the pulp has become putrescent, we have a condition which calls for the use of the most powerful germicides, deodorants, bleaching agents and solvents at our disposal. The putrescent pulp has produced, according to Dunglinson, water, carbonic acid, ammonia, carburetted hydrogen, and a semi-putrid substance which is volatilized and has an infected odor. The odor from a putrescent pulp has been ascribed by dentists to hydrogen sulfid. Dr. Peck, of Chicago, has experimented with a view to ascertaining what are the principal gases and products resulting from a putrescent pulp, and came to the conclusion that there are others besides hydrogen sulfid. No doubt the more closely Dr. Peck investigated these gases, the more fully he became convinced that the odor of hydrogen sulfid was not bad enough to represent them. They are probably given the name of hydrogen sulfid because we do not know any worse name to call them.

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* Read before the American Dental Society of Europe.

The pulp chamber, root canals and dental tubuli are saturated with putrescent matter and products of decomposition of the most poisonous kind. How shall we destroy these gases and remove this putrid matter from the minutest tubuli of the dentine?

In former years we did not appreciate the conditions present in a tooth containing a devitalized pulp, which had become putrescent, and depended entirely upon germicides to destroy the micro-organisms which are so active in the process of putrefaction.

But the process of rendering the tooth aseptic was a very slow one!

We, and more especially our patients, had much trouble from the poisonous gases given off by the putrescent pulp, which necessitated leaving the tooth open; and when we were able to close the tooth we had not disposed of the organic matter which was present in the tubuli.

In using sulphuric acid and peroxide of sodium we have remedies which break up the mephitic gases, destroy the micro-organisms, dissolve the organic matter and coloring matter, and leave the tooth in as perfect a condition as it is possible to place it.

The most valuable agents for treating such conditions are those which are easily broken up and give off oxygen.

Peroxide of hydrogen has been considered one of our most useful remedies, but Dr. Peters claims that the quantity of available oxygen in peroxide of sodium is seven to ten times as great as in peroxide of hydrogen, and that whereas pyrozone coagulates albumen, peroxide of sodium dissolves coagulated albumen.

We apply the rubber dam to shut out the saliva and wash the tooth with absolute alcohol to remove any micro-organisms which may be attached to it.

A free and direct opening is made into the pulp chamber. A Donaldson nerve broach is dipped into fifty per cent sulphuric acid and inserted into the pulp cavity and the same broach dipped into the powdered peroxide of sodium and again inserted.

A vigorous reaction at once takes place, the peroxide of sodium is broken up and large volumes of oxygen are released; and being in the uncombined state, combine with the poisonous gases and destroy them. The putrid matter is dissolved and forced out by the effervescence and there is no danger of infected matter being forced through the apex if there is a free opening into the pulp chamber.

The tooth is bleached because all coloring matter is dissolved and the tooth is left clean and sweet.

The tooth may be wiped out with cotton wrapped on a broach and dipped in water and more peroxide of sodium introduced to make sure of counteracting the sulphuric acid.

To illustrate the action of this treatment, two cases from practice may be given: A young lady of twenty-two presented herself, said she had been kept awake the night before by pain from a tooth, and she wished to have her incisors filled with porcelain fillings. Right superior central was elongated, very sensitive to the touch, gum swollen, and constant pain. Three of the teeth were very badly discolored and all of the incisors much darkened by decay, which had not been removed when the teeth were filled with cement. Rubber was applied to the painful central, it was opened and treated in the manner described; the pain was relieved almost immediately after the treatment with the acid and peroxide of sodium was begun.

After the remedies had been applied the entire length of the canal, it was wiped out with a solution of formol, a pellet of cotton was saturated with formol, placed in the pulp chamber and the tooth tightly sealed. The pain subsided very quickly and the swelling disappeared in a few days. The laterals were afterward treated in the same way, as they were found to contain devitalized pulps. As these teeth were very badly discolored, they were treated later with caustic pyrozone (twenty-five per cent) to further improve the color.

The devitalized teeth improved very much in color, until they were almost the shade of the one line central, and porcelain fillings were inserted of No. 8 of Dr. Jenkins' shades. But in two months the color of the teeth had gotten so much lighter that it was necessary to remove these fillings and replace them with shade No. 3, the lightest shade amongst Dr. Jenkins' samples.

This was attributed to the remarkable bleaching and cleansing properties of the peroxide of sodium.

Another case in practice was that of a lady in whose mouth a lower molar had been drilled at the gum line and left in this condition for some years. As you all know, this kind of a tooth presents all the conditions for successful culture and propagation of all the micro-organisms which are to be found in the mouth, and the quiet and peaceful life they here enjoy, far removed from the injurious influences of the tooth brush and antiseptic washes, generally develops a race of bacilli that can defy ordinary germicides. This tooth was subjected to a treatment with sulphuric acid and peroxide of sodium, sealed tightly, and gave no trouble, with the exception of a slight soreness in the gum for one day.

A NEW IMPRESSION MATERIAL.*

By John Girdwood, D. D. S., Pa.; L. D. S., Edin., Edinburgh, Scotland.

While the materials used for taking partial impressions in crown and bridge work—plaster and modeling compound—are of proved value, they lack certain properties invaluable for this purpose. For instance, in the taking of an impression and bite in plaster, particularly when the bite is close, the plaster frequently fractures so badly that it is next to impossible to piece it together. Impression compound, on the other hand, cannot be made sufficiently hard and unyielding not to bend or drag during its removal from the mouth, and accordingly it fails to give a correct impression of the parts. A material, therefore, which will combine the good qualities of both, and, in addition, have special advantages of its own, will, I trust, prove as welcome to members of our profession as it has to myself. Such a material we have in sealing wax, but let it be understood at the outset that I do not refer to the *ordinary* sealing wax of commerce, which is entirely unsuited to our needs.

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* Read before the American Dental Society of Europe.

It is now many years since I began to use sealing wax for taking impressions and impression and bite together in crown and bridge work, and having the good fortune to procure some of a very high grade, with it I obtained results which satisfied me that I had secured a substance which in many cases yielded better results than either plaster or modeling compound. This led me to inquire of the makers whether something even better than what I had been using could be had. My inquiry elicited that the firm I consulted makes fourteen qualities of this article, and here I think it may be well to explain in what details the better qualities differ from the poorer, as this has a direct bearing on the suitability of sealing wax to our work.

The highest grade is composed of pure lac and vermilion, while successively low qualities contain a lessening quantity of lac, which, on the downward scale of quality, is gradually replaced by American rosin, till in the poorer qualities American rosin, combined with cheap coloring matter, is exclusively used. It is the substance lac which is so indispensable to us as dentists, and without which sealing wax would be as useless as tallow. It is an animal product best known in the form of shell-lac, and is a colored resinous substance found in India, Burmah, and the East. It is produced by a small insect, one-eighteenth to one-thirty-sixth of an inch in length, called *Coccus lacca,* belonging to the sub-order *Homoptera,* or Bugs. The lac insect lives in many kinds of trees, but the best lac is collected from two or three species of fig. As soon as the insects are hatched they fix themselves by their proboscides to suitable twigs and begin to form cocoons or lac cells. The females are far more numerous than the males, and secrete a greater quantity of lac, which surrounds all parts of the insect except the mouth, two apertures for air, and the anal opening.

The appearance of the lac incrustation varies. It sometimes takes the form of a thick, irregular, bark-like layer attached to the branches; at other times the appearance of rounded prominences, coalesced, surrounding, or scattered over the branches. The lac, when removed from the twigs, is placed in tubs of water, and beaten by pestles. It is now in the state of "seed lac." After drying, it is melted in cotton bags before charcoal fires, and by twisting the bags forced through the pores of the cloth and thus strained.

Lac has many uses in the arts. It is used for making varnish, French polish, etc., and for fine sealing wax, for which latter purpose it far surpasses all other materials, such as rosin, by its greater strength, plasticity, smoothness of surface and hardness when cold.

American rosin, the base of the cheaper varieties of sealing wax, is a vegetable product, and while it melts readily, under *great* heat it becomes so suddenly hard as to be unworkable and absolutely impossible for our requirements.

A trial of the improved wax at once showed me I had obtained a suitable material for my purpose, but wishing to see if it could be still further perfected, I stated my requirements to the manufacturers, stipulating for a material which would soften readily, remain plastic till nearly cold, and retain that condition long enough to enable me to take any impression, or impression and bite combined. In addition to the lac and vermilion, some other agent was added to give additional softness. An alteration in the proportion of the ingredients enabled them to furnish me with a material which I have found all that could be wished. It will thus be seen that between the friability of plaster and the unmanageable plasticity of modeling compound, sealing wax has ample scope to prove its superiority.

And now let me pass to the *USES OF SEALING WAX*:

(A) For taking impressions in crown and bridge work.

(B) For taking impression and bite at the same time.

(C) For holding loose teeth steadily while grinding or scaling them.

(D) For supporting loose or tender teeth when filling.

(E) For supporting teeth which are affected by pericementitis, and which have to be opened up.

(F) For steadying separators and clamps, as mentioned in a former article, "A Potpourri of Practical Hints," No. 1, *Cosmos*, Vol. 36, page 12.

(G) For filling in the hollow surfaces of crowns in polishing to prevent possible bending of caps or pins by the mechanical assistant.

(H) For making up special trays in prosthetic work.

(I) For stopping the bite at a given height in prosthetic work.

(J) For filling root canals in alcoholic solution.

In referring to the use of the material for taking impressions in partial cases I have already indicated the advantages it possesses over plaster and modeling compound, its increased hardness and rigidity over the latter, and its decreased brittleness compared with the former. The body of this material is tougher and more unyielding, while its surface plasticity is greater than that of modeling compound; consequently in impression-taking the gums are better forced away from the necks of the teeth and roots by this than by any other impression material, leaving the sharpest outline of the root end—a great boon to those who make their crown bands from plaster models.

(A) For taking partial impressions in crown and bridge work. Select a suitable tray and manipulate as with modeling compound; see that the wax is not too hot, and chill the under side of the tray for a moment with cold water; remove when sufficiently, but not too, hard. If undercuts are very pronounced, these may be built up with hard beeswax around the teeth, or with temporary gutta-percha. There is, however, always less drag with sealing wax than with modeling compound.

(B) In taking an impression and bite in one operation, say, for a single crown or bridge, when the caps and bands are in position on the roots, proceed as follows: Soften a mass of sealing wax of sufficient size and mold it round the capped roots and adjoining teeth with the fingers; this done, make the patient close the jaws tightly and then mold the wax over the buccal and labial surfaces of the adjoining teeth so as to secure a good impression of them, and remove when sufficiently hard. Hardening may be hastened by spraying with cold water.

(C) For steadying loose teeth which have to be ground, sealing wax will be found better adapted than modeling compound because of the properties above described. When, for instance, one or more loose lower incisors have to be ground down, mold a piece of the wax over the lingual surfaces of the six lower teeth to form a splint, chill it and hold in place with the thumb of the left hand, and with the index finger of the same hand steady the teeth on their labial surface, and grind from without inward or across.

(D) For supporting loose or tender teeth when scaling or filling, especially with gold. Such a splint, distributing as it does the strain over a number of teeth, reduces the shock to the loose tooth or teeth to a minimum.

(E) Again in that troublesome class of cases which presents itself where a tooth is the seat of acute pericementitis and when the indications point to an immediate opening into the pulp chamber as the only chance of affording early relief, such a splint as I have indicated enables one to perform this operation with the smallest amount of pain. Without such an aid a large percentage of cases are so unbearably tender as to preclude the possibility of handling them until the acute symptoms have subsided.

(F) For steadying separators and clamps, sealing wax is of great assistance. See the article before referred to.

(G) For filling in the hollow surfaces of crowns, etc., in polishing, to obviate possible bending of caps or pins by the mechanical assistant. To those of our number who have known and suffered from this *deus ex machina*—the dental mechanic—this use of sealing wax requires no insistence from me. Frictional heat in polishing will, of course, soften it, but not so soon as either gutta-percha or modeling compound, which are most often employed here.

(H) For making up special impression trays in prosthetic work. When one or more teeth are left standing in either jaw it is often impossible to get a tray that will nearly fit the case, and not infrequently it is found necessary to make a special tray. This means an extra visit on the part of the patient, and loss of valuable time to the busy operator. The well-known plan of making up an impression tray with modeling compound to fill up the space between standing teeth so as to enable plaster or wax to be carried to place answers fairly well in most cases, but when the impression material to be employed is modeling compound, the results are seldom satisfactory, as the "cut-offs," or pieces of modeling compound which are fixed to the tray become softened by the added impression compound. Even when plaster is used the modeling compound "cut-offs" are often softened by the natural heat of the mouth as well as by the warmth evolved by the plaster in setting, and as they bend on withdrawal of the tray from the mouth, a correct adaptation of the broken pieces of plaster to place in the impression tray is rendered nearly impossible; in addition, the surface of these "cut-offs" lacks that smoothness which is one of the chief advantages sealing wax possesses over other impression materials. For this purpose it is not necessary to use the finest kind of sealing wax as is used for taking impressions; still it is always advisable to use a fine quality. The following type of cases will serve to show my meaning: If the palate be high and the canine and molar or wisdom teeth alone remaining, a special tray may be quickly and accurately made up. Select a tray that will embrace all the parts, soften a piece of sealing wax of sufficient size, heat the tray to make the wax adhere, attach the mass to the palatal surface, and mold it to that surface while still plastic. Then press to place in the mouth and proceed in the same way with pieces to nearly fill the interdental spaces. If a plaster impression is required, a more accurate trimming of the sealing wax "cut-offs" is wanted than when modeling compound is used; the surface may be roughened to help retention of the plaster, or left smooth if it is deemed advisable to withdraw the tray first, and afterward to remove the plaster impression in pieces. If a compound or other impression, heat the surface to facilitate adhesion. Unlike modeling compound, sealing wax is best softened by dry heat. A sufficient mass should be softened over the Bunsen burner or spirit lamp and placed in a suitable tray. After an impression is cast and the model has had time to harden, the impression and model should be placed in boiling water for a few minutes to soften the sealing wax, which is removed in the same way as ordinary modeling compound.

(I) For stopping the bite at a given height in prosthetic work. Here again sealing wax is unsurpassed, especially when few teeth remain, and the whole force of the bite is directed on these. Small pieces of boxwood, so often used, are not easily adaptable, and take a considerable time and much trying in before they can be adjusted to the correct height; and, moreover, they do not take the impression of the opposing teeth, which is such a certain guide in subsequent "tryings in" to the correct bite when once obtained. Modeling compound or beeswax are not resistant enough to withstand repeated trials in the mouth, but yield and allow the bite to sink. Sealing wax blocks, on the other hand, can be stopped at the right height, and when chilled will not yield further.

(J) Alcoholic solution for filling root canals. While I cannot claim to have had long experience of this material for filling canals, yet what I have had encourages me in the belief that this solution in many cases possesses advantages over many others now in vogue. It is manipulated in the same way as chlora-gutta-percha, but is far more manageable, because alcohol does not evaporate so quickly as chloroform. Instead of inserting a cone of sealing wax after the canal is filled with the solution, it has been my habit to use a tapered piece of wire to fill the canal. I use a thickish alcoholic solution of *white* sealing wax for this purpose.

These, Mr. President and gentlemen, are the points in practice to which the new impression material has been applied by me. I do not pretend to have mentioned all that it is capable of, or to have exhausted its field of usefulness. It is now many years since I first employed it, and its possibilities have grown with time. In submitting it to your notice I do so knowing that it will be the experience of those of you who may take it up that whatever things in the practice of our profession we can do without, sealing wax is *not* one of them.

In conclusion, will you permit me to thank you for the patient hearing you have given my most imperfect remarks.

A NOTE ON PULP DIGESTION.*

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILL.

The question of handling a tooth pulp is one that has troubled many dentists for the past hundred years or more. Of course, we all know that a few expert operators can always remove the pulp at all times and in all teeth, and they always fill the roots of such teeth with gold!

Then there are a few who destroy pulps and mummify them, with various pastes of a desiccating nature, containing, in addition, disinfectant properties. It is wonderful how teeth will behave even when badly treated, but we are always in search of something better.

During the years that I have been experimenting on pulp digestion I have found out that the pulp of a tooth must be dead before it can be digested, and that it should be dug out of the pulp chamber at least, so that the smallest remainder is left to be acted upon by the paste.

If the pulp is washed with a dilute acetic or trichloratic acid, one-half of one per cent, before the paste is applied, it acts much better than when it is not so washed. The average time the paste is to remain in the tooth is two weeks (in some cases of large masses of tissue, three weeks will be better). When there are pulp stones and only a portion of the circulation is cut off, the paste will not digest the remainder of the pulp for a long period (say, six weeks). It must be gratifying to many to find that after the death of a pulp it can be digested, with a non-irritating, non-poisonous paste. (For a full account of previous articles written by me, see *Dental Cosmos,* December, 1900; The Dental Review, December, 1900, and January, 1901, and succeeding issues.)

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* Read before the American Dental Society of Europe.

At present writing I prefer to apply the paste as follows:

Papain	1 grain
Glycerine	1 drop
Hydrochloric acid, 1-100	1 drop

The paste is mixed on a clean glass or porcelain slab and packed into the pulp chamber of the tooth. The bulbous portion of the pulp is to be removed before introducing the paste. Seal the cavity with oxyphosphate of zinc. I always place a little mat of paper over the paste before introducing the oxyphosphate. Do not disturb the tooth for two weeks or even longer. You will find, when the tooth is opened, that the pulp is a jelly-like mass (if it was dead at the beginning), which can very easily be removed, and the roots can then be filled. I always use the rubber dam from the time I commence the destruction of the pulp until the root is filled. Do not use pressure in covering the paste with the oxyphosphate of zinc. Do not use gutta-percha for covering the paste, as it may leak. Do not have the cavity too full of the filling so that the occluding teeth will irritate. Use hydrogen dioxide to wash the remains of the pulp from the roots and follow with a bichloride solution, 1 to 2,000, slightly acidulated with hydrochloric acid, one drop to each ounce of the solution. Dry the roots and fill them.

In more than 150 teeth I have not had a case of pericementitis follow the filling of a root. I prefer this method to mummification, because the animal tissue is digested and absolutely removed from the tooth. It remains for your own skill to properly fill the roots, with any indestructible material that they can be filled with.

RESTORATION. CORRECTION OF CURVES, OPENING AND ADVANCING BITE BY MEANS OF BRIDGE WORK.*

By WM. SLOCUM DAVENPORT, D. D. S., PARIS, FRANCE.

Figs. I and II.† Illustrate the mouth of a gentleman 28 years of age. Promiscuous extraction of the teeth caused a general collapse of the arches and shortening of the bite, until the lower front teeth were hidden from view and strike against the gums above.

Figs. III and IV. Shows cases after treatment; the bite was opened and advanced and the anterior posterior curve of the arches corrected by means of bridges, which were so constructed as to force the articulation of the teeth forward to the desired position.

Fig. V. Shows the nature of the bridge anchorage and rests in position on plaster model, preparatory to the bridge construction.

Fig. VI. Shows the bridges completed. In each case one anchorage only was used, which is my usual practice.

Bridge R—Sup. Consists of pivot (a) in palatine root of first molar. (b) Point of contact against canine. (c) Counterbalancing bar.

Bridge L—Inf. (a) Pivot cap rest for bridge, also used to lengthen first bicuspid to the normal curve. (b) Point of rest. (c) W. S. D. gold and platinum rigid cap. (d) Gold extension to prevent elongation of wisdom tooth or derangement of curves and to serve in mastication.

Bridge R—Inf. (a) Double pivot rest (in living tooth) for bridge, also used in correcting curve by elongating bicuspid. (b) Point of rest. (c) W. S. D. gold and platinum, half rigid and half soft cap, which enabled a perfect adjustment to the tooth without in any way mutilating same.

Fig. VII. Shows patient before and after treatment. Note the change in lower lip and chin. The left upper bicuspid and right third molars were left free to elongate with time, which will complete the normal curves and establish a good articulation of the teeth. It is my practice in cases where the bite requires to be opened, to advance the bite to correspond with the upper front teeth; I have never had any difficulty in accomplishing this or in jumping the bite when desired.

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* Read before the American Dental Society of Europe.

†Pictures not received with paper.

The only thing necessary is to establish a retaining articulation, and the jaws soon accustom themselves to the new conditions.

In the study of all classes of restoration, I find the Bonwill articulator indispensable, though I am aware of its inaccuracy in some cases, but in this case no readjustment of the bridges in the mouth was required.

PROCEEDINGS OF SOCIETIES.

INSTITUTE OF DENTAL PEDAGOGICS. EIGHTH ANNUAL MEETING HELD AT NASHVILLE, TENNESSEE, DECEMBER, 1900.

(Continued from page 603.)

DISCUSSION ON DR. WEEKS' PAPER. SEE PAGE 648.

DR. N. S. HOFF: Dr. Weeks has talked so long on this subject, I have no doubt you are all tired of it, but Prof. Brophy tells me that Dr. Weeks is going to make a present of this model to each of the colleges represented here to-day. I don't want to criticise him too much, for fear he will leave my school out. I have been trying to think of some nice things I could say about it so that I could cheer him up a bit and make him think it is worthy to present. It is certainly a beautiful model; it is the nicest thing of its kind I ever saw, and the most practical.

Without entering into any criticism, if I were disposed to, of the work which he has presented to us, the form of the work, the method of presenting the work to the class, in the class-room, it seems to me that it is so commendable I fear we shall all be dissatisfied until we have possession of these facilities. If we can get it out of Bro. Weeks, it will save us a whole lot of bother and trouble; if we cannot, then we shall have to make it ourselves. We must each have a model like it.

He has mentioned so many things that are perfectly obvious to us that simply the mentioning of them is enough to carry conviction and need no great elaboration.

There are some thoughts in his paper that struck me very forcibly, and one is the thought that whatever we teach in these technic classes should have a practical bearing. Now I think that this is a very important feature—it is not only important in the subject which I tried to talk upon this morning, that is, getting at the student himself; to teach from his standpoint. We all know how often it occurs, particularly with the first year men, how they will come to ask about this, that and the other piece of work they are about to do. "Is this anything I am ever going to use?" or, "Is this a practical thing?" I don't know where they get that notion, that things are not going to be practical that are taught them. It seems to be either their fault or the teachers, I don't know which. If they don't see the direct application of it at once, they do not feel that interest in it that they do if they can be sure that it is to be something they are to utilize by and by. This may come, of course, as a fault of the circumstances which brought them into the study of dentistry as a profession. It is a thing, possibly, sometimes, that we need to educate them out of, but we must take advantage of this fact; it predominates their minds to such an extent that it seems to me we do not do ourselves justice, we do not grasp all the opportunities we have, unless we do take advantage of such conditions. When we have educated them out of such ideas, then we can present more abstract teachings, perhaps. So if we can show them such models as these in an attractive way, just what the thing is to be when it is done, it is a great point gained. If we can by any combination of means or circumstances present to them a form of teaching which commends itself to their minds at this time, it seems to me we have got the advantage of them. We are getting hold of them in their own way, taking them on their own grounds as they are, and we have an opportunity then to appeal most strongly to them.

We must not, however, spend too much time in catering to the student. Some of us may think, possibly, that the sooner we get the student out of that attitude of mind, the sooner we will get into the mind the proper method of doing his work, or the sooner we can make him follow our dictation, the more power we shall have with him. But this, in our experience, is not true. We must adapt ourselves to the material we have and adapt ourselves to our circumstances. And all such things as this are helpful. You cannot describe these different methods to a class so well without an illustration as you can with them. Possibly some of the methods the essayist has advocated do not appeal to all of us, but we can very easily adapt to this model any peculiar method of our own and make the idea ours.

Dr. Weeks recommends the use of high fusing material for the making of experimental crown and bridge work. Now we do not in practice use high fusing material always in making crown and bridge work. We use a great deal of gold—perhaps the large majority of cases made with gold as the metallic substance—we use very little platinum, except in porcelain work. The teeth which we use in making crown and bridge work will not stand the high fusing solder which he advocates, and I think it is very much a question whether brass, after all, is not more nearly similar to gold, so far as the fusing point is concerned, and whether we cannot better teach by using brass in place of this aluminum bronze, because it simulates the material in which the students will work in practice. The fusing points are more nearly similar; the methods of working are more nearly similar. I have never used this aluminum bronze, but the statement that it is used because it has a high fusing point, it seems to me, renders it objectionable for technic purposes. To my mind any one who can use brass in technic work can use gold in practice. We use brass solder in place of silver solder, and brass plate as a basis of all technic work. A solder made of copper, silver and zinc fuses slightly below the fusing point of brass plate, and so near that that it simulates more closely the use of gold solder on gold plate than the platinum or silver solder does on this bronze, and so I think that if we are going to keep up this idea of doing those things that are practical, we must keep as close to the practice as we can. If we cannot use the gold because of its expense, we must use the thing that is most nearly like gold to be consistent. When I want to illustrate the use of platinum I use German silver as a substitute for platinum in technic work. I use copper where I would use pure gold, as a substitute for pure gold, and brass where I would use gold plate.

Dr. Hillyer: Dr. Weeks mentioned that some one has criticised the fact that his model is in one piece. I think it an advantage for the student to be able to assemble his work on one model.

I want to speak of one criticism which I heard in the adjoining room of one particular crown which is placed upon that model; and that is the hood crown. While many of us would not make it in our own practice, if we could possibly avoid it, there are those who go out from college that are called upon to make that crown, and consequently it becomes necessary that they should be taught tha just as much as any other construction.

Dr. Hart J. Goslee: I am very glad indeed to have had the privilege of looking over the paper of the essayist this morning. It was given to me late last evening, and I glanced over it casually during the discussion of the preceding paper, and it is a splendid presentation of the subject of the technics of crown and bridge work, and I should like to have had time to go further into the discussion than I will be enabled to, and even devote, perhaps, as much time to discussing it as Dr. Hoff did to Dr. Peck's paper this morning.

One of the first things that the essayist referred to was that of wasted time in repetition in the teaching of technic work, and I would take exception to it in a general sense from this standpoint, that if we have the time to devote to it, in that allotted for technic work of this nature, we cannot give the students too much, even though they may make two pieces identically the same; because they are benefited by each one, and while I would not advocate by any means that time be wasted in useless repetition the students cannot get too much of it.

They should have a great variety of ideas given them. Dr. Hillyer has referred to the hood or jacket crown, and while we know its application should not be generally practiced, the student should be taught how to make one, because sometimes they are indicated. For instance, in an extensive lower bridge, perhaps extending from the cuspid to the second or possibly even the third molar, I feel that a hood slipper or jacket crown for that cuspid tooth would often be the very best thing that we could possibly put there, because it would be much stronger than if we cut the cuspid clear down to the gum line and put on a dowel crown, especially if there was considerable absorption. So we must teach everything that has any practical bearing. We should condemn it where it should not be used, and teach the student only to utilize it in those places where it is specially and directly indicated.

One of the crowns referred to by the Doctor in his essay, styled the jacket crown, I would criticise. The jacket crown as described is to-day practically obsolete, and to it as much as anything else that I can conceive of just at the present, is due the condemnation by a great many of the application of porcelain to crown and bridge work. When you slip a thin matrix of platinum over the protruding and projecting end of a tooth it does not leave room enough for porcelain, and never possesses strength enough to be permanent. I have made a great many of them, and seen many made by men distinguished in this line of work, but most often they are failures, because you do not have room enough for the porcelain—and the strength of porcelain increases in proportion to its bulk—so you must cut the tooth down to make room for it. Such a crown might possibly be indicated on teeth where you do not know how long the root may be, or whether you can get a post in it or not, and in such instances should be invariably applied to gold and not porcelain in combination with a facing.

The essayist approves of the construction of the work on plaster models by the students, which I have abandoned entirely, because I feel that to do it successfully the student must have a model that is practically indestructible. Four years ago I presented to this society a little method of combining metal with the plaster model so that you would have a portion of it indestructible. Tin models are made, to be used for taking impressions, shaped as desired for the bridge or crown and an impression in gutta-percha, of the working part of it then taken and filled with fusible alloy or tin, making a metal working portion, then another impression of the entire model in modeling composition is taken into which is placed this metal portion, which is then filled with plaster, and we have a plaster model with the exception of the working part, which is metal and indestructible; which is of advantage, of course, over the plaster, because the student can do all the work he wants without any danger at all of destroying the model on which he is at work.

A very commendable thing which he made reference to in the teaching of crown and bridge work, was the use of anatomical articulators, and I want to say that I believe it is just as essential to construct a bridge upon an anatomical articulator as it is a plate. We do not use these articulators enough. A great many bridges break and fail simply because they do not properly articulate, and do not admit of the lateral movement that we get in the natural articulation.

I criticise, like Dr. Hoff, the use of aluminum bronze and agree with him in that we should teach the students to use a metal as nearly similar to that which they will use in practical work as possible. Two years ago in presenting a syllabus of prosthetic technics to the committee appointed for the purpose, I suggested and stipulated that brass should invariably be used in the teaching of technic work wherever gold would be indicated practically; that pure copper should be used wherever pure gold would be practically indicated, and German silver where platinum would be indicated, and I believe it is the only method by which we may familiarize the student with the fusing points and characteristics of the metal that he is going to use when he applies them to practical work. Aluminum bronze does very nice work, I have no doubt, but it is harsh and stiff and unlike gold in its working qualities, and I would never have a student construct something of it that would represent something constructed of platinum later on in practical cases.

Another thing the essayist referred to was the use of very thin materials in the construction of porcelain crowns and bridges, because of lessening the expense. Just the minute we begin to teach the student, even to permit him, to use a thin material for technic work, we will lead him to think that probably he can do that in practical cases to cut down the expense; and I believe that we ought to vigorously require him to use a material for his technic work, in thickness as well as in fusing point, that he would have to use for practical work.

The use of platinum solder in single crown work, which the essayist speaks of, is entirely unnecessary and not at all indicated. The point made in favor of platinum solder for porcelain work is this: that it enables you to use a solder which does not fuse or melt at the fusing point of the porcelain in the furnace. If you have perfect contact between the parts, and solder with pure gold and fuse that pure gold perfectly it becomes absorbed by and alloyed with the platinum, and you have a joint that is just as strong as you can possibly get with platinum solder. The trouble is that they use, as a rule, entirely too much pure gold and do not apply heat enough to fuse it down well so that it will flow over the surface and become alloyed with the platinum, with the result that when it is placed in the furnace covered with body, the pure gold then melts and is absorbed, leaving a space, if you please, which invariably causes porosity of the porcelain.

Two contact surfaces of platinum can be soldered with pure gold, placed in the furnace along side of porcelain, and you cannot separate them when taken out of the furnace. The joint is perfectly brazed.

I criticise in a sense the essayist's method of root preparation, for I believe, gentlemen, that one of the greatest mistakes in teaching crown and bridge work is in neglecting the essential requirements of root preparation; for the reason that we know one of the greatest causes of failure in this work is the neglect shown this very subject. Whether it is necessary to devitalize teeth for a shell or telescope crown is not to be considered here, but it is necessary to sacrifice enough of that tooth to properly reduce the dimensions and circumference equal to the cervix. If you do not, you will never have a perfect fit.

Probably if we had some kind of instrument that would go around the neck of a crown after it had been mounted, burnishing it in to the root at all points, then we might negligently treat root preparation. So long as we have not an instrument of that kind, however, we must have the root prepared so that the band will fit, up under and within the free margin of the gum.

Reference was made to the changing of the color of facings in soldering. Even where pure gold is used, there is no occasion at all for the bleaching of facings, and I predict that not one in a hundred will change materially if selected with a knowledge of their capacity for heat. I do not have that trouble myself with the teeth that I now use for porcelain work and have not had for some time. Some teeth will, of course, bleach at the fusing point of pure gold to some extent; but if they bleach there they will in the furnace too, so that they should not be used.

The essayist refers to the two central incisors as being practical indications for the use of crowns without bands; but I differ with him there, because I do not believe that when we find sound tooth structure, there is a tooth in the mouth where the crown without a band is indicated. Most often the indications for a crown without a band are in those cases where, because of extensive decay, you have no chance to band, but certainly not on good healthy sound tooth structure, because of the fact that the band adds such additional stability to the crown (if the root is prepared properly and the crown fitted properly) and the immunity from decay it affords, as well as from a possibility of fracture of the root, demands that we almost invariably place bands upon every tooth that we hope to crown permanently.

I do not think that too much stress can be laid upon the strength of the metal parts in porcelain work, and have treated that subject in a more or less exhaustive manner in two papers in the last year and a half, one of which has been published in the Dental Review, the other of which will be published in the *Cosmos* of next month.

The metal construction that I have advocated and taught is almost identical to that which the Doctor describes here—which is very beautifully illustrated, and which will show you that the bridge itself, or even the crown, should possess strength enough in its metal construction, before the porcelain is added, to almost withstand the stress of mastication.

The lingual supports which the doctor has on these models, if you will remember, those projecting spurs, which support the masticating portion, are absolutely indispensable. One of the greatest failures we have had in this line of work in my observation, is the breaking away of that lingual mass of porcelain, because it was not supported, to overcome which I devised these spurs, and you will have failure with your work unless you place them there, or something else that will take the place by preventing cleavage in the stress of mastication.

I think, gentlemen, that as a suggestion of the principles involved in the teaching of the technics of crown and bridge work on the whole, and as a method of illustrating those principles, the essayist has done admirable work, and that this society should give him a vote of thanks for the most excellent presentation of the subject.

THE PRESIDENT: Dr. Weeks, will you kindly close the discussion now?

DR. WEEKS: I know of no better way of closing the subject than to simply veil the model.

WHAT DO WE HEAR.

On oral sepsis as a modifying factor in gastric affections.—George Herschell says that pyorrhoea alveolaris and the presence of septic stumps in the mouth may cause no disturbance if the motor power of the stomach is normal, the gastric juice destroying the larger proportion of the germs. The constant absorption of toxins may, however, set up neurasthenia, and stomach trouble may arise as a symptom of the neurasthenia, or secondarily. In some rare cases gastritis may be directly set up by the irritation of the septic material which has been swallowed. When the motility of the stomach is deficient either from myasthenia or as a consequence of pyloric obstruction, gastritis may be induced, or fermentation may be induced in the stagnating stomach contents and the case rendered much more serious and distressing. The physician should know how to treat pyorrhoea, especially in England, where dentists do not all recognize the affection nor know how to treat it!!! —*International Medical Magazine*, June, 1901.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE INTERNATIONAL COMMISSION OF EDUCATION.

A meeting will be held in London, August third and in Cambridge, August seventh. The commission is composed of the following: Mm. Aguilar, of Madrid; Arkovy, of Buda-Pesth; Brophy, of Chicago; Burne, of Sydney; Cunningham, of Cambridge; Godon, of Paris; Grevers, of Amsterdam; Guillermin, of Genève; Giuria, of Gênes; Hesse, of Leipzig; Kirk, of Philadelphia; Limberg, of St. Pétersbourg; Martinier, of Paris; Paterson, of Londres; Queudot, of Paris; Rosenthal, of Bruxelles; Sandstedt, of Stockholm. Questions on education will be discussed and one important subject will be considered—"The study of dental education from the international point of view."

A consideration of the federation of the dental schools of the world (to place them on an equality). This will require a vast advance in methods on the part of some schools, not only in Europe but in the United States.

THE ILLINOIS STATE DENTAL SOCIETY.

One of the most successful meetings of this society was held in Rockford in May. The number in attendance was in the neighborhood of 350 and the clinics were of most absorbing interest. Dr. J. E. Hinkins, the supervisor had prepared a good program which was carried out almost to the letter. The literary program was quite up to the usual standard, among the best papers being those of Drs. Cigrand, Reid, McDowell and Dicus.

OVERPLUS.

The activity in dental circles is so great that it is impossible for one or two journals to cover the whole field. There are so many societies eager to have good papers read to the members that any ambitious or industrious author can have all the audiences he desires. The only thing we note, with regret be it said, is the too frequent habit of borrowing and thus making repetition upon repetition the excuse for not reading an article at all. It has been remarked in the writer's presence when some men's names are on a program, "Oh, I have heard that before," which was partially true, but not the whole truth. On a full examination of the question of overplus we find that too many papers are read, based upon each other, on given subjects, *i. e.*, common topics, like gold filling or alloys, or pulpless teeth or abscess, or pyorrhoea alveolaris or porcelain crowns, and too few on subjects that require patient labor and abundance of time.

If the DENTAL REVIEW published all the matter sent to it the magazine would run up to 160 to 200 pages per month. It is questionable if much of the matter now inserted would not appear better if less of it were printed. We have been using verbatim reports of speeches for a long time and many of them could be condensed into one-half the space they now occupy if many of the spokesmen only thought so. The overplus of speech is as bad as the overplus of words in an article, *verb. sap.*

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir: All of our local societies have ceased business for the summer, but the New York Odontological Society, always alert, issued a call for a special meeting, which announced that at a stated meeting of the society, held Tuesday evening, May 21, a resolution was unanimously adopted inviting the following dental societies to participate in the memorial meeting of the late honored member, Dr. Henry J. McKellops, of St. Louis, to be held at the Academy of Medicine, No. 17 West Forty-third Street, on Wednesday evening, June 12, at 8 o'clock: The First District Dental Society, the Second District Dental Society, Central Dental Association of Northern New Jersey, Dental Association of Southern New Jersey, New Jersey State Dental Society, and the Psi Omega Dental Fraterity.

The announcement also stated that "The meeting will consist of short addresses by prominent members of the dental profession and appropriate music."

The invitation which accompanied the announcement read: "The New York Odontological Society requests the honor of your presence at an in memoriam meeting for the late honorary member, Dr. Henry J. McKellops, of St. Louis, on Wednesday evening, June the twelfth, nineteen hundred and one, at eight o'clock, in the Academy of Medicine, 17 West Forty-third Street, New York. Committee: W. W. Walker, A. L. Northrop, S. G. Perry, M. L. Rhein, J. B. Littig, O. E. Hill, William Jarvie."

The evening of June 12 in New York City was clear but quite sultry; an evening which would tempt one to seek comfort at home or somewhere else where relief from the oppressiveness might be found. In spite of the weather an attendance of seventy-five or more were present at the opening of the meeting by the President of the Odontological Society, Dr. W. W. Walker. His remarks were very touching, appropriate and concise.

The meeting took place in the large hall of the Academy of Medicine; seated on the platform, either side of the presiding officer were the presidents of the several invited dental societies; Dr. DuBois of the First District, Dr. Turner of the Second District, Dr. Gregory of C. D. A., of N. N. J., Dr. Riley of New Jersey State Society, Dr. Hart of the New York State Society.

A piano soloist rendered an appropriate selection at the opening.

Dr. Walker announced that no printed program had been prepared, but that the committee in charge had striven to arrange one in keeping with the occasion.

All those who had been approached to speak were present; he called upon Dr. E. T. Darby, of Philadelphia, to open the meeting. The doctor evidently held Dr. McKellops in high esteem, for he spoke very feelingly of him as a man, professionally and socially.

Dr. Darby said he expected some day to meet dear friend Mac.

Between each of the speakers it had been arranged to have some musical selection.

Mrs. Garrett Smith, a vocal soloist, was then introduced. She sang, "Crossing the Bar."

Dr. A. L. Northrop was the next to deliver his tribute to the memory of the honored departed. He referred to Dr. McKellops as one of our standard bearers and said "he has fallen."

He had never heard anything against his professional reputation.

"When such men as have passed away during the past few years—founders of our profession—drop from our midst we can truly get together and mourn."

Dr. Northrop also made a suggestion which should be adopted by at least every State society—that there should be a memorial meeting yearly.

I hope this society will establish that beautiful token of respect for its departed co-workers and that Dr. Northrop's timely suggestion will bear fruit.

The Metropolitan Quartette sang the "Lost Chord."

Dr. Chas. A. Meeker, of Newark, N. J., then had a few words to say of Dr. McKellops as he knew him.

Again Mrs. Smith was called upon. She sang, "I Heard a Voice."

Dr. E. C. Kirk, of Philadelphia, said among other things "The greatest tribute that we could pay to Dr. McKellops would be to follow his teachings."

Mr. Gallatin, the pianist, rendered another selection, after which Dr. Walker announced that about thirty letters had been received from friends of Dr. McKellops, who wished to pay tribute to his memory, two of which were read. One from Dr. W. C. Barrett, of Buffalo, the other from Dr. J. W. Wassall, of Chicago.

The serious side of Dr. McKellop's life was dwelt upon by Dr. S. G. Perry, of New York.

He recounted many little incidents of his knowledge of the deceased. Of his habits while stopping with him (Dr. Perry) during his visits to this city. Of the esteem Dr. McKellops seemed to regard him with. Of the presents he bestowed, among which was a gold mounted mouth mirror. Dr. McKellops remarked when he presented it, that "Now I can tell if you use amalgam." Dr. Perry said, "Gentlemen, you will find no traces of mercury about that mirror. Not that I have not used amalgam, but because I always respected Dr. McKellops enough never to use it while working amalgam."

Dr. McKellops lived in the stone age and died in the golden age, which defined would imply—when the profession were throwing stones at one another, and when the profession came somewhat to regard the "golden rule."

Dr. Perry concluded his remarks by reading a sonnet which he had composed to the memory of Dr. McKellops.

The quartette of male voices sang again, this time, "Lead, Kindly Light."

Dr. Walker then called upon Dr. B. Holly Smith, of Baltimore.

Dr. Smith responded, and before he spoke it was noticeable that he was much affected. Said Dr. Smith, "My friend McKellops dead? No, NO, he has simply passed beyond me; he has made his landing further up the stream of life and I shall meet him again some day." Dr. Smith's speech was truly the most impressive of all that was said that evening. He corrected in a mild way references to some of Dr. McKellop's private life which had been referred to by previous speakers (let it be said) with no attempt at disrespect. The true chivalry of the Marylander was evident and he could not hide it any more than he could his character.

Dr. Smith touched the hearts of us all with his expressions of deep affection for his departed friend, and prepared us for a full appreciation of the final remarks of the president and what followed.

Dr. Walker in referring to one of the occasions when he was in company with Dr. McKellops told the story of the meeting which was held at Nashville, Tenn., after which all the party had gone to Lookout Mountain. A very enjoyable time was had. After a time conversation seemed to lag, when there arose a voice. Dr. McKellops was singing one of those dear old Southern melodies—which the quartette will now sing. The quartette sang "My Old Kentucky Home," and it was beautifully rendered too, as was all the music for that matter. The effect was inspiring and thrilling.

This really was the conclusion of the meeting but Dr. Walker extended the privilege of the floor to any who may choose to occupy it.

Dr. C. S. Stockton, of New Jersey, wished to pay his tribute to the memory of the departed. In a few minutes and in a well chosen way he spoke the final words of the meeting.

This ended a beautiful service, a tribute to the memory of a fine character.

The program was finely arranged, every detail of which was perfect. Nothing occurred, nothing was said to mar the effect.

It was not a pathetic meeting. Seventy-five or more came to honor the man, because as Dr. Walker said, "duty called them."

After adjournment friends, in greeting, seemed so impressed with the occurrences of the evening that their grasp seemed more cordial. The fraternal spirit was in the gesture and in the heart.

Among those present from out of town was Dr. Finley, of Washington, also Dr. Donnally, Dr. Gaylord, of New Haven, and Dr. McManus, of Hartford.

Another of our good friends has passed to the immortal state, during the past month, Dr. Zachary T. Sailer, of New York. He was sick but a short time. A man of unobtrusive manner, yet with much force of character. All loved him who knew him. His death was a shock to his friends. No other man of the Alumni Association of the N. Y. C. D., of which he was treasurer for years, will ever be missed more keenly.

Yours truly,
"THE BOROUGHS."

MEMORANDA.

Dr. W. W. Walker has gone to Europe for a vacation.

Dr. Geo. H. Bentley will spend the summer in Europe.

Dr. Harry M. Hill, of St. Louis, visited Chicago in July.

Minnesota State meeting at Duluth July 30, 31 and August 1.

Dr. F. T. Breene, of Iowa City, was married June 19 at San Jose, Cal.

The Northern Illinois Dental Society will meet at Joliet, October 16 and 17, 1901.

Dr. Julius Weinberger, of Para, Brazil, was married to one of the belles of that city May 18, 1901.

Dr. William M. Griswold, formerly of Chicago is located at 23 Glockengiesserwall, Hamburg, Germany.

Dr. T. W. Brophy will attend the meeting of the British Dental Association at Cambridge, England, August 3, 5 and 6.

New Jersey State Dental Society, Asbury Park, July 17, 18, 19. Splendid clinic program and good list of essayists.

Dr. E. R. Carpenter, secretary of the Odontological Society of Chicago, has gone to Europe for a three months' visit.

The Southern branch of the National Dental Association will hold its fourth annual meeting July 29, 1901, at Nashville, Tennessee.

Up to the time of going to press no new member of the State Board of Dental Examiners had been appointed by our new Governor.

The International Committee on Education will meet at Cambridge, England, about August 3, in conjunction with the British Dental Associations. See a notice elsewhere in this issue of THE DENTAL REVIEW.

The National Dental Association will meet in Milwaukee the first Tuesday in August. The meetings will be held in the Masonic Temple. The Plankinton Hotel and the Pfister are among the leading hotels. Dr. Geo. V. I. Brown is chairman of the local committee of arrangements.

Dr. Otto Arnold has resigned the office of dean of the dental department of the Ohio Medical University and has been succeeded by Dr. L. P. Bethel, of Kent, Ohio. Dr. Bethel will devote the larger part of his time to the interest of the school and continue the work of editing the *Ohio Dental Journal.*

THE DENTAL SOCIETY OF THE STATE OF NEW YORK.

Officers for 1901-1902: President, J. I. Hart, New York; Vice President, R. H. Hofheinz, Rochester; Secretary, W. A. White, Phelps; Treasurer, C. W. Stainton, Buffalo; Correspondent, H. D. Hatch, New York.

St. Louis expects to hold a dental congress in 1903 during the world's fair. The committee having the matter in charge is composed of Drs. Wm. Conrad, B. L. Thorpe, F. F. Fletcher, A. H. Fuller, W. M. Bartlett, W. F. Lawrenz, and the late Dr. McKellops was on the committee, but his place has not been filled yet.

INTERNATIONAL DENTAL CONGRESS.

The executive committee will meet in Cambridge, England, August 3, 1901. The members are M. Chas. Godon, E. Sauvez, F. Aguilar, E. Forberg, J. E. Grevers, F. Hesse, M. Pichler, Geo. Cunningham and A. W. Harlan. Dr. Chas. Godon is chairman and Dr. E. Sauvez is secretary.

NORTHERN ILLINOIS DENTAL SOCIETY.

Dr. C. J. Sowle, of Rockford, who is president of the executive committee of the Northern Illinois Dental Society, which meets at Joliet, October 16 and 17, is at work with a determination to make it a banner meeting. Mark off the dates in your appointment book. The Northern Illinois Dental Society meetings are always good.

THE CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association of Northern New Jersey, held on the evening of February 18, 1901, the election resulted as follows: Frank G. Gregory, President; J. W. Fisher, Vice President; Frederick W. Stevens, Secretary; Chas. A. Meeker, Treasurer.

Yours very truly,

FREDERICK W. STEVENS, *Secretary.*

THE MILWAUKEE MEETING.

The committee appointed by the Chicago Dental Society have made arrangements with the Goodrich line steamboat "Virginia" to leave Chicago at 9 P. M. for Milwaukee, Monday, August 5, to attend the National Dental Association. We would like to have the members join us. Have your railroad tickets read via Goodrich steamboat line Chicago to Milwaukee and you will get the benefit of the one and one-third fare round trip. Berths 75 cents extra. Rate from Chicago to Milwaukee and return $1.25. Berths can be reserved by sending to the undersigned, Frank H. Gardiner, chairman of the committee, No. 843 Marshall Field Annex, Chicago.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

674,232. Apparatus for swaging gold crowns, Benjamin B. Brewer and W. M. H. Burfeind, San Francisco, Cal.

674,332. Draw plate and stand for making seamless gold crowns for teeth, Benjamin B. Brewer, San Francisco, Cal.

674,834. Swaging dental crowns, Benjamin B. Brewer and W. M. H. Burfeind, San Francisco, Cal.

674,499. Toothbrush case, Lewis Eaton, Jr., Lancaster, N. Y.

674,761. Dental tool for filling teeth with amalgam, Philip J. Friedrichs, New Orleans, La.

674,419. Root canal filling for teeth, Charles T. Kinsman, Williamstown, Mass.

674,581. Means for swaging metal dental plates, Norris C. Leonard, McMinnville, Tenn.

674,423. Mechanical speed regulator, Guido E. Lob, Chicago, Ill., assignor to S. S. White Dental Mfg. Co., Philadelphia, Pa.

674,650. Dental tongue holder and drain tube, John A. W. Lundborg, San Francisco, Cal.

674,449. Dental bridge work, James B. Morgan, Davenport, Iowa.

674,565. Head rest for chairs, Frank Ritter, Rochester, N. Y.

675,183. Dental tool, Willis E. Allen, Baltimore, Md.

674,965. Dental tool, John C. Craft, Newark, N. J.

675,044. Mounting artificial teeth for exhibition, Henry D. Justi, Philadelphia, Pa.

675,674. Elevating or lowering device for dental chairs, Frank Ritter, Rochester, N. Y.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

BANQUET TENDERED TO DR. WALTER M. BARTLETT BY THE GOOD FELLOWSHIP DINNER CLUB OF ST. LOUIS, SATURDAY, JUNE 22, 1901, 7 P. M.

The Good Fellowship Dinner Club tendered Dr. Walter M. Bartlett a banquet at the Mercantile Club, on the evening of the 22d, and on this occasion presented him with a beautiful loving cup as a slight token of their esteem for him as a professional brother and also to show their appreciation of the faithful services rendered the profession during the four years he served on our board of dental examiners. He had all the endorsements necessary for reappointment, and no doubt would have been on the board four years longer but withdrew his application to accept a professorship in the dental department of Washington University, our law not permitting a man connected with a college to be a member of the board. About forty of the Doctor's friends and admirers gathered round the festal board and enjoyed themselves as only members of this club can—no knockers, all friends and good fellows. Everybody was happy and having a good time when Dr. Conrad, who acted as toastmaster, called us to order, and after a short, witty speech, claimed that although the program called for Dr. Lindsley to make the speech of the evening and present the cup, that the boys insisted he should do it, and without more ado, launched forth, waxed eloquent in his remarks, and grandly approaching the climax, presented the cup. Withdrawing the beautifully embroidered square of linen that covered it—presto, change—the handsome three-handled loving cup had been transformed into an old fashioned "cave of the winds," with one handle and yellow bands, but the inscription in gilt letters stood out grandly, while the contents took us back to boyhood's happy days on the farm, although it is not customary to serve sweet cider and doughnuts in this manner. When the twenty minutes of mirth had passed and Bartlett's temples had been bathed in ice water, Dr. Lindsley, after a fine and fitting address, presented the cup to the still blushing guest of honor.

Mid wine, toast and song, mingled with the perfume of choice Havanas, this coterie of rare good fellows whiled the merry hours away, and the last carriage departed—but not until another day had been announced, and the cider and doughnuts lingered only in memory. May the Doctor's future life be studded with the stars of prosperity as his past career shines with noble deeds and worthy acts.

ST. LOUIS.

INTERNATIONAL DENTAL FEDERATION.

A meeting of the Subcommittee of the Executive Council of the International Dental Federation (F. D. I.) was held at Paris on May 27, 1901.

At this meeting the following measures were decided upon:

1. The proposed meetings in England this year will be held at the time of the annual meeting of the British Dental Association[1].

2. The Executive Council will examine at a preliminary meeting in London on Sunday morning, August 4, the proposed regulations for the International Dental Federation which the Subcommittee is charged to prepare.

3. The International Committee on Education will also hold a first meeting on the same day in London.

4. The International Committee on Education will meet again at Cambridge on Wednesday, August 7, at the conclusion of the meeting of the British Dental Association.

5. A second meeting of the Executive Council will be held on Wednesday, August 7, after the meeting of the International Committee on Education to conclude business.

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[1] The annual meeting of the British Dental Association will be held on Saturday, August 3, Monday, August 5, and Tuesday, August 6. The social headquarters will be at the Hotel Cecil, London (special tariff).

6. A general meeting of the Executive Council and of the International Committee on Education will take place on Wednesday, August 7, at Cambridge. To this meeting the Delegates of the National Committees, the Delegates of the Societies and the members of the Societies and national Federations which took part in the constitution of the Congress of 1900 are invited. Other visitors will be especially invited by the Executive Council.

7. The last meetings will be held within the precincts of the University of Cambridge.

8. A special banquet will terminate this first session of the International Dental Federation.

9. Delegates may be appointed by the Executive Council, by the Federations or by national societies.

10. Notices of convocation, containing the orders of the day for the various meetings and all other necessary instructions will be sent out at a later datr.

For all information apply to Dr. Sauvez, general secretary of the Executive Council, 45 rue de la Tour-d'Auvergne, Paris.

HYPERIDROSIS.

The treatment of hyperidrosis must vary with the cause. Local treatment in the milder forms of hyperidrosis is of great use, and in many cases is all that may be required. While insisting upon the treatment of the general condition, the following prescriptions may be found useful, as recommended by Van Harlingen in *Twentieth Cent. Practice:*

℞. Pulv. acidi salicylici.		
Pulv. zinci carb. precip.		
Pulv. magnesia uste	ʒiv	16
Pulv. amyli	ʒxv	60
Pulv. crete	ʒxx	80

M. Sig.: For local application.

AS A LOTION.

℞. Acidi tannici	℥i	32
Alcoholis	℥viii	256

M. Sig.: Use as a lotion.

In hyperidrosis of the palms and soles he recommends washing them in carbolized solution, after which the following should be applied:

℞ Unguenti picis (U. S. P.)		
Unguenti sulphuris (U. S. P.), āā	℥ss	16

M. Sig.: Spread upon cloths and keep in place with a bandage.

The following is recommended by Hebra in obstinate sweating of the soles of the feet:

℞. Emplast. diachyli.		
Olei olive, āā	℥ii	64

M. Sig.: Apply as an ointment after cleansing.

A formula similar to the following is recommended by Ishoppe in bromidrosis of the axilla:

℞. Zinci sulphatis.		
Ferri sulphatis, āā	℥ii	64
Cupri sulphatis	ʒvi	24
Beta naphthol	gr. iv	25
Essentiæ thymi	m. x	66
Acidi hypophosphorici	gr. v	30
Aq. destil	O i	512

M. Sig.: Apply locally as a lotion.

The following has been recommended as one of the most efficient powders in hyperidrosis of the feet:

℞.	Acidi salicylici	gr. lxxv	5
	Acidi boracici	ʒiiss	10
	Acidi tartarici	ʒiiss	10
	Zinci oxidi	ʒvi	24
	Talc. prep	ʒiss	48

M. Sig.: Wash the feet with medicinal soap, and dust the powder into the stockings in the morning before drawing them on.

OBITUARY.

N. W. Williams, D. D. S.

Dr. Nelson W. Williams, born at West Liberty, Logan County, Ohio October 23, 1834, died at Nice, France, May 5, 1901.

Doctor Williams commenced the study of dentistry with Doctor Harris, of West Liberty, Ohio, about 1855. During the succeeding five years he diligently prepared himself to enter the Ohio College of Dental Surgery, which he did in 1860. After taking one course he started practice at West Liberty, dividing his time between that place and Kenton, Ohio. After two years of practice he returned to college, whence he graduated in 1863. Shortly after this he entered into partnership with Drs. Jonathan Taft and George Watt, of Xenia, Ohio.

In 1871 he was invited to enter the practice of Dr. Slayton, Sr., of Florence, Italy. This he accepted, going there in 1872, but after a year's stay in Florence, he decided to go to Geneva, Switzerland, where he bought out the practice of Dr. George W. Field, now of London. After several years of hard work his health failed, and he had to go to the Riviera to recuperate. Finding he could not endure the rigors of the Swiss winters, he decided to dispose of his Geneva practice, and locate at Nice, where he practiced until his death. He was a member of the Ohio State Dental Society, and the Mad River Dental Society, from both of which he received a specially gratifying testimonial upon his leaving Ohio for Europe. While at Geneva he was one of the five founders of the American Dental Society of Europe, and while failing health of late years had prevented his regular attendance at its meetings, he always had a warm place in his heart for its welfare and success, as was testified by his cheery letter read at its last meeting at Cologne. As a matter of history it may be interesting to note that Drs. Watt and Williams were the first to make crystal gold in the United States, and Dr. Williams was the one to introduce it to the profession in Europe, and he also showed his lamented friend Dr. de Trey, of Vevey, how to produce it, the outcome of which is the solila gold of to-day.

Dr. Williams was the pioneer of American dentistry on the Riviera, and those who had a close acquaintance with him will sadly miss his kindly, genial greeting, and will join with the wife and daughters who now mourn the loss of husband and father, in bowing to the stern fate that deprives them of a dear, good friend, and our profession of one of its pioneers and most skillful and conscientious representatives.

He was laid to rest in the French cemetery at Cancade, near Nice, in the presence of a great concourse of sorrowing friends and all the members of the French Dental Society of the Riviera. R. I. P.

THE

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ORIGINAL COMMUNICATIONS.

IMMUNE AREAS IN RELATION TO CAVITY PREPARATION.*

BY RODRIGUES OTTOLENGUI, M. D. S., NEW YORK.

At the March meeting of the Second District Dental Society of the State of New York I had the pleasure of reading a paper in which I questioned the need of extending the gingival margins of approximal cavities, so that they should be covered by gum tissue. In advance of the meeting, copies of my paper were sent to Drs. Black, Johnson and Wedelstaedt of this vicinity and to Dr. Rhein of New York, which gentlemen were expected to uphold the proposition. Four prominent men who would be expected to oppose such extension—Drs. Darby, Perry, William Trueman and Holly Smith, also contributed to the discussion. The result was a tremendous attendance at the meeting, and a specially prepared and thoughtful discussion of the subject. The report of that meeting has been published in *Items of Interest* for May, and this paper being in a sense a continuance of the argument as I view it, I desire to say that in the discussion which is to follow I invite replies to the men who agreed with me at the Brooklyn meeting as well as to such further views as I am to express this evening.

The human tooth in its normal condition, untouched by decay, is, to my mind, vastly superior to a tooth containing a filling, and as a corrollary it must follow that the tooth decreases in value in proportion as the filling increases in size. If one should attempt to refute this proposition by claiming that a tooth containing a filling may remain a useful organ for any stated period, however long, I will remind him that the life of a tooth after filling being the same, that tooth which receives the filling at the age of twenty will have served its owner ten years longer than the one filled at the age of ten.

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*Read before the Chicago Dental Society.

If it be theoretically true that sound tooth substance is of more value to the organism than the foreign body of metal which replaces it, then it becomes necessary that the concientious dentist should remove non-carious tooth substance only when indicated as an absolute necessity for the future welfare of such teeth as reach his hands in a diseased condition.

Thus it is a necessary course, though for many years disputed, that all carious portions of the tooth should be removed. Secondly, I think we have universally adopted the theory that future safety demands that infected territory should also be removed, in all other directions if not toward the pulp. Thus logically we reach the query, shall the cutting go farther? Shall unaffected areas be encroached upon?

A study of the vulnerable parts of teeth, together with experience as regards continuance of or recurrence of caries, has unquestionably taught that in many instances a more permanent operation is the result when we carry our cavity margins away from vulnerable territory and towards or into what tentatively may be termed immune areas.

This brings me to a discussion of immunity, but before proceeding, let me pause for an explanation of two phrases which I have just used. I have alluded to "continuance of caries" and to "recurrence of caries." By the first I mean caries coming after the insertion of a filling, not in the filled territory, but in an adjacent vulnerable situation. An example would be caries of the palatal sulcus of a superior molar which had been unaffected at the time of placing a filling in the distal occlusal sulcus. Recurrence of caries would be the reappearance of caries about a filling which had been made to occupy not alone the distal occlusal sulcus, but which had been carried over into the palatal sulcus as well, whether because of existing caries, or as a preventive measure. I desire in the course of this argument to have it prominently before your mind that I discriminate between a continuance of caries, and a recurrence of caries. Later, I will take this point up again.

In regard to immunity, we may ask, "Is there any part of a tooth which is immune to decay?" In reply I must say "No," because there is no part of a tooth from apex to occlusal surface upon which I have not seen caries. If, however, we ask whether there be parts of a tooth immune as an initial point of inception, I say

"Yes." There is quite a difference between finding caries reaching a specified point, having started elsewhere, and caries beginning at a point usually looked upon as invulnerable. For example, I think it safe to say that caries has never been found upon the root of a sound tooth in a healthy alveolus, the integrity of its pericemental attachment being unimpaired. Thus it follows that caries can attack the root of a tooth only after processes of disease shall have exposed it to the agencies within the mouth which cause decay. The root perhaps is the only absolutely invulnerable part of the tooth in a state of health. Of the crown of a tooth—by which I mean all of that part projecting from the gum and covered by enamel—we recognize certain areas as comparatively immune; immune when unaffected by congenital defects, or until such time as the encroachments of advancing age alter the environmental and physical conditions.

The locality which I have found least prone to caries is the lingual surfaces of the six lower anterior teeth, though caries of the lingual surfaces of any of the lower teeth is uncommon except in the presence of diseased or resorbed gums, or of artificial dentures, either of which may afford unusual opportunity for the retention of food debris.

Next, I would place the occlusal surfaces of all teeth. By this I mean the extreme ends of the cusps of molars and bicuspids, and the incisive edges of cuspids and incisors. In none of these places have I seen caries have its inception except in the cases where enamel defects have presented pits or crevices, or where, from abrasion, the enamel itself has been removed to an extent which exposes the dentine. In the latter case caries may supervene because of the less resistant nature of dentine, which, under the stress of mastication, is worn away into cup-shaped concavities which thereafter retain debris.

Next in order of immunity I place the labial surfaces of the twelve anterior teeth, excepting the cervical parts of such surfaces. Here we do not commonly find decay except after the destruction of the enamel from erosion, or as a result of enamel defects. Please remember that in all cases, I am speaking of decay at its inception.

Lastly, and perhaps to the surprise of my hearers, I claim a considerable degree of immunity for the gingival portion of approximal surfaces, the immunity being greater in the twelve anterior teeth.

We now approach the question of theory of so-called extension for prevention. Broadly stated, this means the extension of margins away from positions which are most vulnerable and toward or into territory which is less vulnerable or perhaps immune.

It is my opinion that very much more has been claimed for the practice in general than could be supported by proof irrefutable. This statement will oblige me to turn aside for a moment and discuss the value of evidence. It is a deplorable fact that the majority of men understand little of logical reasoning, and of differentiation between assertion and proof. For example, in my Brooklyn paper I attacked the theory of reaching immunity from recurrence of decay by the placing of margins beneath the gum. In reply, Drs. Black, Johnson and Wedelstaedt all asserted that such procedure brings immunity, but offered not an iota of proof in support of this very assertion which I had disputed.

A part of the argument for extension is based upon the fact that in the treatment of occlusal cavities in molars, decay nearly always supervenes where the filling is restricted to the area actually carious, whereas permanent results are obtained by freely cutting out the sulci, even though not yet decayed. With this as a premise, the doctrine has arisen that in all regions extension should be practiced with a view to prevent recurrence of decay, and it has been recommended that cavity margins should be carried toward or into immune territory. When we analyze this we discover that the premise, though a fact, has been misinterpreted, with the result that the deduction is not a logical sequence of the actual occurrences. Extension in occlusal cavities in molars is not practiced with a view of reaching immune territory nor does it prevent recurrence of decay. On the contrary, the extension is meant to carry the filling into all vulnerable places, viz., the sulci to their extremest limits, and it is continuance rather than recurrence of decay which is prevented. In the preparation of such cavities we aim to open the sulci thoroughly, but we do not endeavor to carry our margins well up on the cusps in order that they may lie in the immune territory. On the contrary we cut out the sulci thoroughly, and widely if necessary, but nevertheless make the cavity as narrow as possible. When inserting the filling, however, we allow the gold to overlap and extend beyond these true cavity margins, so that a filling in a cavity of moderate size may superficially seem to be one quite extensive. In other words, in occlusal cavities we carry the margins of our *fillings* toward the immune areas, but we do not extend our *cavities* to that point. This is not done on any other surface, and certainly not upon the approximal surfaces. I mean that nowhere, except upon the occlusal surfaces, do our gold fillings materially lap over and extend beyond the true cavity margins.

Thus we find that in occlusal cavities in molars, first, the extension is intended to include vulnerable territory rather than to reach immune areas; secondly, the fillings materially overlap the true margins, whereas in approximal surfaces the gold is made flush with the margins; and lastly, it is continuance and not recurrence of decay which is prevented by the extension.

Yet the results obtained in these places by methods entirely opposite to those advocated for approximal surfaces, have been made a basis of argument for the treatment of approximal surfaces.

I must allude to evidence now from another standpoint. It has been asserted that recurrence of decay at the gingival margin will result in a large percentage of cases if the margin is not carried under the gum. Dr. Wedelstaedt has placed this percentage of failure as high as eighty per cent. Upon what evidence have these deductions been made? Seemingly from the fact that such failures have been found about fillings placed by other men.

Now, gentlemen, I wish to state that I have taken the trip to Chicago to get that proof which was not vouchsafed to me in Brooklyn. Proof that immunity from recurrence of caries invariably follows the placing of margins beneath the gum. I have been accused of attacking a scientific mode of practice; of casting a doubt upon a valuable, or indeed, the only true method; and I have been told that I have a power for good or evil which is incalculable. I doubt that I have any such extensive influence as has been attributed to me, but granting that it be so, let me say that I am ready to abandon my own views and my own methods. I am ready to adopt this doctrine, yea and to preach it, provided you prove it to me. But let me warn you that the loose notions of evidence which have satisfied some will not satisfy me. You cannot tell me that eighty per cent of approximal fillings fail at the gingival margin, where extension beneath the gum has not been followed, and support such a claim by saying that you refill eighty out of every hundred approximal cavities that come to you from other men. To such an argument I would say first, that perhaps in your ardor you are removing and replacing fillings which would save the teeth for years if not for life. But more especially I would say you know nothing about the circumstances under which the teeth were first filled, nor of the skill of the operators whose failures you are counting. You have a right, then, to ask what sort of evidence it is which I demand, and this I am ready to answer.

Dr. Wedelstaedt in his Brooklyn paper intimated that I am practicing the dentistry of 1879, while he is practicing the dentistry of 1891, at which date he fixes the origin of that dentistry which places the gingival margin under the gum. It is also Dr. Wedelstaedt who says that where the margin is not under the gum, he finds failures in eighty per cent of cases. I ask Dr. Wedelstaedt to cast aside his statistics based upon the work of other men, the conditions and circumstances of which are unknown to him, and tell me what was his own experience prior to 1891, when he also presumably was practicing the dentistry of 1879. Between 1879 and 1891 did eighty per cent of his own approximal fillings show failure at the gingival margin? If so, his evidence is worthy of consideration. The fact that he could not save teeth in those days, coupled with the claim that he can do so now, would certainly have weight. Yet it would not be entirely convincing. For example, he declared that the larger fillings, made necessary by the extension, can be inserted more quickly than the smaller ones, because of the increased accessibility. May it not be, then, that when the cavities were not so accessible, he lacked the skill to properly fill them? And may not his present success be an individual achievement rather than a record for the method? If he admits that prior to 1891 he met with anything like eighty per cent of failure with approximal cavities, and I doubt that he will make such an admission, I will offset his testimony by my own experience, for I can state that in twenty-five years of practice, during all of which time I have consistently extended my cavities rootwise only to the limitations of the zone of infection, I have never seen recurrence of decay at the gingival margin of my own gold fillings, so that it has been a constant wonderment to me that this place should be counted as particularly prone to decay. And when he tells us that he does not have recurrence of decay since he has placed the margins under the gum, I will tell him that this also is a question of individual skill rather than of environment, for what few failures I have had at the gingival margin have been in connection with cavities where the decay had so extended the margins, and moreover that of all of the gingival decay which I have seen about the fillings of other men, by far the greater number have been where the margins were under the gum rather than where the margins were free of the gum.

I have mentioned Dr. Wedelstaedt specifically, but my remarks are meant for all. Give me no statistics based upon the failures of others, but tell me of your own failures and I will hearken. It is only of your own work that you know everything. In declaring that I have not met failure at the gingival margin, I wish it not to be understood that all my fillings have remained in place without failure. It has been mainly through my failures that my practice has been modified from time to time. I have never been conscious of practicing the dentistry of 1879, nor of any other particular date. Rather I have supposed that I have varied my methods from time to time as I have learned of better ways from others or through my own failures. For example, I must admit that I have ever had what has recently been termed a "reverence for tooth structure." I have always abhorred undue show of gold. Consequently in my earlier days I tried always to save as much tooth as possible, and I have retained much thin enamel which I now cut away. I have seen recurrence of decay along labial borders due to this practice, but at the gingival margin nothing of the kind could have occurred, since no cosmetic considerations would have prevented my cutting to solid tissue. I also had a notion at one time that great retentive shape was requisite to hold gold in place, and I made grooves and undercuts which not only were not requisite, but which precipitated recurrence of decay because of my failure to properly or thoroughly fill these deep places. Dark blue halos about my fillings soon taught me the fallacy of such methods. Yes, gentlemen, I have had my share of failures, and I trust that I have profited by them. But when I admit my failures, you must give weight to my statement that without carrying my gingival margins under the gum, I have never had recurrence of decay in that region.

With this as my personal experience, will you consider it strange if I hesitate to change a method which, in my hands at least, has been successful for a quarter of a century? Will you blame me if I ask for proof that absolute immunity lies under the gum?

Let us now for a moment consider this assertion that beneath the gum margin we find a zone where caries is impotent. In the paper of Dr. Black published in the *Dental Cosmos* in 1891, and in the paper of Dr. Wedelstaedt read at the recent Brooklyn meeting, the argument is advanced that where gold crowns extend below the gum margin, caries does not supervene even though the gold necessarily stands away from the tooth more than would a filling. Dr. Wedelstaedt also states that he found similar immunity in connection with overlapping fillings, though of course not arguing that fillings might so be left. He likewise asked if it is not the experience of all that where the edge of a band crown does not reach the gum, caries is sure to supervene.

It seems remarkable that my experience should have been so utterly at variance with those here recorded. In effect we are asked to believe that caries will not occur under the gum even in connection with the bands of crowns, or in the neighborhood of overhanging fillings. Where roots are properly beveled, and the crowns telescoped on so as to fit snugly, I am ready to admit that caries is an improbable sequence. But even with this perfect adaptation, if the interproximal space be not protected by adequate knuckling, it has been my observation that subsequent decay would be almost a certainty, rather than a rarity. With ill-fitting crowns, recurrent caries has been a constant observation in my practice. In connection with poorly finished fillings extending under the gums, it has been my misfortune to meet the most hideous sorts of cavities, cavities in some instances reaching nearly to the apex of the root, and in many cases exposing pulps in teeth, the crowns of which appeared almost sound.

While I know that no isolated case selected from practice can be logically used as a basis for final deduction, yet I will cite a case which I think peculiarly instructive. I have in my care a man who is, unquestionably, the most scrupulously cleanly person whom I have ever met. No one could possibly cleanse the teeth more thoroughly nor more conscientiously than he. For fifteen years I have seen at least once a year several fillings placed in his teeth nearly forty years ago by Dr. Varney. Whether the gingival margins were originally lapped by the gum or not, I do not know. During the last fifteen years, however, they have not reached the gum, which has considerably receded. Yet for fifteen years, to my personal knowledge, these margins have been free from the gum and likewise free from recurring decay, despite the high probability of recurrence given by Dr. Wedelstaedt. You will tell me that I am speaking of a mouth of unusual cleanliness. Exactly! And I will permit you to tell me that this alleged vulnerable gingiva margin has escaped because of his cleanly habits, and then I will give you a history of extensive decay in the same mouth in the region which we are told is immune. Please do not tell me that you have not claimed immunity for the region under the gum, for if immunity is not there found, there can be no other good reason for cutting through sound tooth tissue in order to place the margin of the filling in that situation.

About ten years ago, because of the ravages of erosion, which had entirely denuded the labial surfaces of this man's teeth of their enamel, I recommended crowns, and placed them on his six front teeth. Because of extensive recession of the gum at the labial aspect, it was necessary that considerable gold band should show, in the effort to have the edge of the band beneath the gum. Within two or three years further recession exposed this edge of the band, and since that time it has remained uncovered. No caries has supervened, but of course these labial surfaces, as well as the edges of the bands, were easily kept clean, and as the gold bands are brighter today than when placed, it is evident that they have been kept clean. Curiously enough there was no recession of gum of any consequence between the teeth, and none at all at the palatal aspect. On these three sides, therefore, the bands were covered with gum tissue. The bands were made of pure gold, and were telescoped tightly over the beveled root ends and fitted accurately. In addition to this, owing to the recession at the labial aspect, it was possible after setting the crowns to polish the edges beneath the gum with narrow polishing strips.

About two years ago I discovered decay under the gum at the distal palato-gingival angle of both central incisors. By packing cotton in these places the gum was forced away, and removal of decay exposed cavities which in depth reached to the platinum pins in the crowns, while in width they extended about one-quarter of the circumference of the root. These cavities were thoroughly cleansed and filled with amalgam without removing the crowns.

This is no isolated experience. I have found many crowns covering cavities. A few I have treated as described. By far the greater number have disclosed such extensive caries that the only proper course was the removal of the crowns. Only last week a patient complained of a lower molar crown. It was firmly attached and all edges of the band lay well under the gum. Between the crown and the molar back of it I found hypertrophied gum tissue which bled readily. I removed the crown and found a cavity of decay which had eaten away the posterior root half its length. I also found a large cavity under the gum and beneath the gingival edge of a handsome gold filling in the molar behind it. This filling must have reached beneath the gum when first inserted. It was necessary to replace the gold filling with one of amalgam, so extensive had been the depredation. The root was likewise built up with amalgam and a new crown adjusted. These and many similar experiences, gentlemen, make it difficult for me to believe that immunity lies beneath the gum margin. Indeed, I think the margin safer just this side of the gum, where it may be reached by floss silk. And this brings me to a consideration of my allegation that the gingival area on approximal surfaces is a comparatively immune area.

Let me definitely explain my meaning by this statement with which I have no doubt many will take issue. Where, upon approximal surfaces, does caries begin? Dr. Black says just rootwise of the contact point. I say, at the contact point, and I have been recently observing more closely than ever. However that may be, it begins at or near the contact point. Does any one claim that it ever has its inception near the gingiva? If you have ever seen an initial cavity in an approximal surface, more especially in the six anterior teeth, the parts near and at the contact point being uninvolved, you have seen what I have never met. And if you have ever seen it, I venture that the occurrence has been so rare that you might well remember the patient's name. For this reason I declare that the area is comparatively immune. Let us now imagine that a cavity occurs at or near the contact point; imagine such a cavity prepared and filled without extension, save to include the infected tissue. We have between the gingival margin of such a filling and the gum septum, a surface which I am speaking of as the gingival area. Dr. Johnson in his Brooklyn paper said that if all of the approximal surface is vulnerable, why not include it in cavity, and my answer must be that not all of the approximal surface is necessarily vulnerable. The gingival area is immune, until caries has first attacked the parts about the contact point, and becomes eventually infected only as caries reaches it from that region. Let me mass my evidence in support of this statement. I have already said that we do not find initiation of caries here. I add that neither do we find recurrence of caries here. Please mark well the following statement: Gingival recurrence of decay is invariably along the actual edge of the filling. I have never, or with sufficient rarity to say never, seen a second cavity rootwise of a filling, which did not reach to the original filling. It is my belief that cavities rootwise of approximal fillings have their inception along the gold margins, and starting there extend to and involve the gingival area. I do not believe that caries can have its inception in the gingival area and thence extend to the first perfectly filled cavity. My deduction is that caries along the gingival margin is due to some defect in the management of that margin during or after filling and in no sense is dependent upon its position relative to the gum. I believe that the security of all margins is rather a matter of manipulation than of position, and consequently I am yet to be convinced of the necessity of extending gingival margins so that they shall be overlapped by gum tissue. I have elsewhere said that a perfectly prepared and perfectly filled cavity, the margins of which lie under the gum, is as immune as the hand of man can make it. But I say also that similar immunity will result from similarly skilful work the margin not being under the gum. It is a question of manipulation and not of environment.

PRESIDENT'S ADDRESS.*

By Henry P. Carlton, D. D. S., San Francisco, Cal.

It is with great satisfaction and no little pride that the first meeting for organization, held during the World's Columbian Dental Congress, in Chicago, in '93, is recalled. As we look out upon the *results* of that gathering, in this meeting here in Nashville, these few years later, we realize that we have developed and expanded most comfortably for seven years under the title of the "National School of Dental Technics," but this is our first year as the "Institute of Dental Pedagogics," the title adopted at our last meeting to indicate our desire for a broader scope, a larger usefulness and farther reaching results.

That our last meeting was certainly one of great interest and fruitfulness need not be said; our carefully edited transactions testify to that. While deeply impressed with every paper then presented and so ably discussed, the symposium of the fifteen-minute talks on our text-books seems to me to make the most lasting impression, and I would recommend something along similar lines to every succeeding program committee. So much in retrospect; in prospect we are this year to have the banner meeting of our existence as a Society, for the program has been in the hands of a most efficient committee, and we are meeting among the most hospitable and warmest-hearted people in the world. What with program and entertainment in the hands of Henry W. Morgan as Chairman, there will be without question a great "feast of reason and flow of soul."

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*Read before the Institute of Dental Pedagogics.

In glancing over the programs of our last few sessions, I have been impressed particularly by the papers on methods in teaching. Dr. Wright's excellent paper, two sessions ago, on "The Problem of Methods," will be remembered; also the late Dr. H. H. Burchard's on "Teachings of Pathology and Therapeutics," and the able article of Dr. Webster at the *last* meeting, on "Dental Pedagogy," which he considered from the standpoint of psychology, and which evoked a most profitable discussion. Great though the benefits gathered from all these by the attentive teacher, it seems to me that in his opening address of last year, Dr. Hoff struck the true keynote in speaking of the teacher himself, when he asked, "Does it necessarily follow that because a man has made a success in the practice of his profession he is qualified to administer the affairs of an institution to educate professional men, or because he can make a beautiful and artistic filling that he is the man to instruct others in the same art? And are not many of our teaching faculties organized on these standards?" In full accord with this is Dr. Kirk's weighty declaration, "What dentistry needs to-day more than anything else is properly trained and educated teachers."

Accordingly, I owe it to the richness in suggestion of the address of my predecessor that I have a theme for an opening address to-day. I can throw the weight of my opinion in with his by considering, not "What shall we teach our dental students? When shall we teach it? How long shall the course of teaching be?" but "What constitutes the well-equipped teacher of dentistry?"

The subject impressed itself on me at our last session and this arrangement of my thoughts and your discussion thereof, I trust, will prove a means of weighing and measuring of values. To a good many of you veteran teachers this is ancient straw. But for the sake of the younger generation will you kindly turn it over and thrash it once again? Agreeing with our past president once more, I think the floor of this institution the proper place for such discussion.

This properly equipped instructor, like the true poet or musician, surely is not *made;* he must be born. Truly, some of us indeed are "teachers by accident," but most of us are engaged in the work because we like it. With some, again, heredity may play its part. My own father, especially fitted for his life work, spent nearly forty years instructing along *normal* lines, so I think it would be safe to say that *some* of *my* desires at least came not entirely by accident.

It has been said that the best way to educate a man is to set him to work; the way to get him to work is to interest him; the way to interest him is to so vitalize his task that he will love it. These are the foundations upon which the perfect teacher builds. Far more important than the question, What shall we study and how long? is the question, *Who* shall be our teacher? How must Nature have endowed this man, this teacher? *First,* with the gift to arouse within the student-breast an interest so full that its expansion becomes a *love* for his life-chosen profession. With a mental equipment, and possessing a power to *transmit* this mentality; for real teaching is causing another to know. As Dr. C. O. Kimball so beautifully expressed it in a recent paper, "to pass the torch," transmitting to others his fund of learning, observation, experience and skill, talents entrusted to him by no *accident,* but of purpose." So he causes his pupil to *know* as *he knows,* and his intelligence to be awakened and keen, and, having interested and instructed him, to lead the student into making actual application of all practical problems. Briefly summed up, then, our ideal teacher must succeed in causing his pupil to love his work, to know it and to use it. Anything that you or I can do, that will accomplish this thing, is good teaching, and constitutes a good teacher.

The paramount issue with us, then, in the college campaign (and four years is little enough time to cover the ground), is to create an interest, a motive, a purpose—the rest will surely follow. Your new student is first to be imbued with the idea that he comes to the college for the help he can get from the *study,* rather than for the sake of the graduation and the degree, and then every man will be assured that he has made no mistake in commencing the study of dentistry. Be his guide along the paths that traverse the forests of knowledge, gathering general truths, the fundamental points you desire to leave with him. If there be a listlessness to overcome, drop into homely and old expression, that gives the mind a nudge and leaves an impression—that is like turning a corner suddenly and seeing something entirely different from the expected. He will now lend a willing ear, and your instruction will prove effective—for after all it isn't so much what you *teach* him that counts, as what you enable him to think for himself. *Give* him something to think about—something to occupy his attention while you are impressing your vital truths. You may have heard the story of the old blacksmith, who tried time and again to shoe a most unruly mule (a mule unusually endowed), and he generally was kicked out of his shop before finishing the work. The smithy studied long upon some plan for success. Finally one day he tied a little piece of string around Mr. Mule's right ear—not too tight, he said, but tight enough to give him something to think about; and he gained his point.

Oftentimes there will be no power in the book or even in the subject to overcome the apathy; then the power of the man, his personality, should score. Do not mistake me and think I believe that *individuality* should come to the front. The curb must be kept on *that*, lest it be overdone. We are apt to become *too* enthusiastic, feeling our success, on noting the impression being made; to enjoy it too far and become vain, and indulge in it for our own pleasure.

I once heard a dental teacher say, "I like to lecture to those Freshmen immensely; they are so new, they drink in every word you say, and anything goes; but I am afraid of the Seniors, they know it all." This type of teacher is not in earnest, his well is shallow, and, as Dr. Barrett so aptly said last year, "his pump will soon suck air and he will have to quiz." The earnestness that aims at great success never fails; once let it enter and everything mean and unworthy is excluded; all follies give way before it; all indolence, apathy, antagonism, give place to earnest endeavor.

The instructor who has earnestness in himself, not a false and simulated thing, like a flitting phosphorescent glow of marsh gas, but the *real thing*, that gives a steady flame with warmth, as well as light, communicates his light and heat to those so fortunate as to sit before him. The eminently successful man is an *enthusiast*, whatever his occupation, especially the man who aims to interest other men and prompt them to make their best efforts.

Men follow a leader who inspires confidence by believing in himself, and the "world stands aside to let *him* pass who knows whither he is going." True, this self-confidence may rest on small and uncertain attainments, and yet it is a "motive force," and as such produces motion, and motion is necessary if we are to "get there." No cold and hesitating instructor may hope to inspire that all-absorbing passion for knowledge that sometimes dominates men's minds and makes them devote time and talents and life itself to the pursuit of science or perfection of art. The American teacher is supposed to know something about *everything*, and as much as he can learn about *something*. There are many who consider such knowledge as a complete equipment for the work he has to do, but it is *not*. If he has not *enthusiasm* he will be as dry as the dust in his own lecture room. Not infrequently the young man who works out to-day what he must teach to-morrow is far more successful than the veteran whose familiarity with the subject makes him forget the difficulties he had to surmount, the problems *he* has mastered. I would not convey the impression that I favor superficial attainments, for I do not; but earnestness with even *moderate* attainment is more effective than a perfunctory performance by the most *erudite*. Enthusiasm is contagious; it gives a ring to the voice, a flash to the eye, a flush to the cheek, an incisiveness to the speech. If we know what we are talking about, and know it well, and talk about it as if it were of vital importance, we may fling all the theories of the pedagogues to the four winds, for we will create a desire for the fullness of knowledge that will not rest satisfied with anything else. To the student thus vitally interested, the acquirement of knowledge will become pleasureable rather than painful; its presentation to his unfolding mind creates a healthy appetite to which you and I must cater, not with indigestible material, but with facts ready for his digestion and assimilation.

We have heard a great deal said of methods and methods. We *all* believe in method, but *freedom* of method with originality. An eminent educator recently said, "*Text-books* really hold the great majority of our teachers down to a well-defined routine." To all practical purposes we dental instructors are doing the same things, teaching the same material in very much the same way. But teaching and *depending* upon *another's* methods is very much like "wearing the other fellow's coat." There must be the *man* along with the method.

They tell a story of a professor in some Eastern college who was a splendid instructor in mathematics. In a foolish moment he was persuaded to write a text-book on his subject. He wrote exhaustively, but it was a complete failure, because he could not put *himself* between the covers of the book. Good text-books, that have stood the strain of criticism, text-books constructed out of the experience of better teachers, are a guide to us in the arrangement and logical sequence of the main division of our subject. So far, at least, should they be at our hand to keep us in line. There is absolutely no way, to my notion, that a teacher can keep *en rapport* with his class except through the medium of a good text-book. But this narrowing a class of young people down to *a* text-book—this shackling of their minds to it—is very bad. Beware of "domination of authority"; the teacher by the text-book author, and the class by *his* authority. Some of us are apt to indulge in this method of instruction, thus limiting the expansion of the student's mind. This ironclad system of pedagogy, as now served up in the majority of our public schools, doesn't appeal to me. Your child and mine, and everybody else's, are stirred up together, and made into a paste and pressed into shape, like so many bricks—molded just so, exactly alike. They do their examples, write their Spencerian copy, precisely alike. It is not until the pupil gets away from this sort of sore-back, method-ridden system, so much in vogue to-day, into the broader atmosphere, let us say, of the University, that he really commences to think for himself. On the contrary (and equally unsafe), there is such a thing as cutting away all restraint; knocking out all the blocks, and floating away on a current of our own choosing. We, then, in our line of instruction must establish the practice of "appealing to their *reason* until they have gained the right to private judgment."

Methods have their place, but "the fire will not burn with all the laws of science or combustion at your command, if you lack the material with which to lay the fire ready to burn."

Some of you may remember the inspiration there was in the old-time winter school, conducted by some young college student for the purpose of paying his own way. *He* had no theories—very little of practice or of other men's methods; his text-books were few and ill-advised. But what of it? He had what was better than courses in pedagogics, better than libraries, better than text-books, however good—he had a tremendous earnestness in himself, that brooked no opposition, and it begat a like earnestness in the boys who trudged through the snow to sit and learn. I have heard men refer to the "superficial training" that boys received in those days, but when I think of the thousands of our greatest men who had nothing better than the winter school, and oftentimes little of that, I am persuaded that all the value does not lie in pedagogical theories and practice, text-books and fads. Contrast, then, the old with the new, and let not the new cast out *all* the old; for all good things are ours; all good methods and means and the thoughts that have come out of honest minds, are ours to adopt, and we should build them in. "We must know the paths our predecessors have trodden if we would tread them farther."

The mechanical routine teacher is *satisfied* with his work and himself. His whole business resolves itself into that of a pump—simply to be pumped full from some reservoir, that he may fill all the little pitchers held up to his nose. In contrast, a perennial spring, constantly bubbling forth, a center of supply—the one a task-master, the other an inspiration.

"No part of a man's education is of very much value to him unless it is in *some way* concerned with his future growth," says Dr. David Starr Jordan, of Stanford University, and this is specially true in dental education. There is a strong tendency among students to devote their entire energies to the practical branches, seemingly ignoring anything and all that would promote the spirit of research; the result—a "bread and butter" course of study. Whether the attitude of mind that demands an immediate result and in the same breath wants to know what there is in it, is favorable to the advance of knowledge, or not, is a question; yet this is the attitude of the American mind to-day. When we have less of the "White Man's Burden" to bear, we will doubtless accomplish much more in deep research.

This desire to *go to work,* this indisposition to undertake deep study, has filled the country with "Cramery Schools"—institutions that offer to equip the student for an active professional career in a few months. They furnish facts without reason, solutions without proof, and turn them out upon the public what *they* call "practical men," to make blunders, to do harm, sometimes irreparable, and bring technical education into contempt among those who are not able to detect a fool masquerading in the garments of a student. The one sure way to fight such institutions successfully is, having equipped the faculty with men of quality, to make instruction deep and as far as possible exhaustive.

Given our student filled with enthusiasm for his work, and having gained a mastery of its general truths (the final aim of all instruction), the teacher's task remains to enable him to turn all this to practical use, and it ought to be an easy and natural sequence. Herein lies the value of personal contact, those hand touches which make you friend and associate, instead of professor. We may talk forever from the platform, but it is the personal work that does the *real* good. Here we get the impress of knowledge upon knowledge, and are down among them, inspiring and invigorating.

Here is a new vision of what education means—not the pouring in of knowledge by the quart—opening the student to see how much has been poured in; but *seeing* him think, talk and *express his thoughts* by putting what knowledge he has absorbed to practical use. I will speak of methods only to say that it seems to me that we should teach *principles* to the *lower classes,* and then get in touch with the Seniors, aiding those who are struggling, perhaps failing, in a way perhaps, no demonstrator can do. With very large classes, this is well nigh impossible, and the true lover of teaching deplores the unwieldy college classes, where large numbers prevent personal contact. But *that* personal contact exercises the greatest power when, in addition to these qualifications of enthusiasm, mental equipment and practical ability, there is added *moral fiber.* If there be behind the teacher the manly man, the individual of the purest moral fiber, you have what must ultimately be the greatest and most lasting success as an instructor.

TEACHING OF MATERIA MEDICA AND THERAPEUTICS —HOW AND HOW MUCH.*

By A. H. Peck, M. D., D. D. S., Chicago.

This subject is, I presume, rated by the majority of teachers in dentistry, and certainly by the vast majority of students of dentistry, as the driest and most uninteresting of the entire college curriculum. Why this is so, I cannot tell. I can only leave you, who are especially interested in this work, to draw the inference. As for me, I would not exchange my position as teacher of materia medica and therapeutics for that of any other in the list of instructors. This work is anything but dry and uninteresting, as I find it. I see in this field opportunities for original research, for a broadening of one's mind, for an extension of one's knowledge, for a general rounding of one's mental capabilities and character, as are found in very few, if any, of the other departments of our college work. And surely the individual who is unable, in the light of such possibilities, to present his work to the students in such a way as to command at the very outset, and to hold throughout, their respect and interest, is certainly not the kind of individual referred to by the gentleman who said, "Poets are born, not made." For this saying applies just as truthfully to the teacher as it does to the poet.

One of the first and most important questions to be considered in a paper of this character is, just how far should we, as teachers of dental students, carry our pupils in this great field—materia medica and therapeutics? Are we justified in being content to teach them just enough to enable them to treat locally, reasonably well and with a respectable degree of success, the various pathological conditions about the mouth? Or should it be our aim to so instruct them that they will at once be able to recognize and intelligently prescribe for the various systemic disorders that are constantly aggravating the local pathological manifestations; and, indeed, many of which latter are only indexes to the systemic disorders? My answer is most emphatically in favor of the latter course. Please do not understand from this declaration that I would have the dental student subjected to as extended a course in materia medica as is required of the medical student. However, I am strongly inclined to the belief that this phase of the question should only be qualified by the unfortunate condition invariably imposed upon us, namely, lack of time. Surely, no one can deny that three years of six, seven or eight months each is insufficient time for the student to become thoroughly learned in all the branches now included in our curriculum; consequently it only remains for the work in some of the departments to be cut down as much as possible, and perhaps chief among these is materia medica and therapeutics.

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*Read before the Institute of Dental Pedagogics.

Nothing grieves me more than to hear, as we frequently do, from the older members of the profession, the leaders, those to whom we are accustomed to look for guidance and inspiration, this sentiment, that it is a mere waste of time to teach the dental student more materia medica than is necessary to enable him to treat, reasonably well, the local manifestations of trouble about the mouth.

What would you think of a man enjoying a lucrative practice in a large city like Chicago, or elsewhere, for that matter, merely treating with local remedies the local manifestations in the mouth of a case of syphilis, and never even thinking that this disease calls for systemic treatment, to say nothing about possessing the knowledge to prescribe for it? More than one case like this has come to light.

The very logic of medicine lies in one's ability to recognize the primary action of drugs upon the various organs and through the great systems of the body, the secondary action upon other organs, and in this manner having an indirect but important bearing upon the local pathological manifestations. Thus is one enabled to note the parallelisms existing between the action of drugs and the pathological conditions in disease—a very fascinating study indeed.

Let it be understood, then, that we favor, first, the teaching of those drugs with which the student will come in contact daily in his practice, such as the antiseptics, disinfectants, germicides, escharotics, counter-irritants, styptics and local stimulants.

Next in importance is a thorough knowledge of at least the standard remedies that may be indicated for the alleviation of such systemic disorders as may in any way aggravate or effect the local diseases or pathological manifestations under treatment; then, a thorough knowledge of the circulatory stimulants and depressants; the respiratory stimulants and depressants; the nerve stimulants and depressants, is essential. The hæmostatics, diluents, antiphlogistics, cannot be passed by with only a superficial consideration.

Then the most important of those agents which assist to the performance of better work by the digestive, assimilative and eliminative organs—the last comprising the sudorifics, diuretics and cathartics. Local and systemic antidotal treatment is of the utmost importance, and the intelligent prescribing of these medicines must never be neglected.

Two important questions now present: How much regarding these various agents shall we teach? And how best may we teach it? In answer to the first question, I will say we cannot teach too much about them. For example, in considering laxatives, while I would teach the principles governing catharsis thoroughly, I deem it unnecessary that dental students be familiarized with the entire list of remedies in this division, but with the principal ones he should be as familiar as should the general practitioner. The same may be said with even greater force of circulatory and respiratory stimulation. I cannot emphasize too strongly the necessity of being thoroughly familiar with the principal agents or means in these two divisions. The exigencies that sometimes arise while administering anæsthetics, either general or local, constitute an argument that should convince all of the soundness of the above statement.

This naturally leads to the thought that one should be familiar with the various signs, symptoms and indications of a failing heart or of failing respiration. The latter, in comparison, is easily detected, hence the more stress should be placed upon the former.

The pulse, when properly understood, is a reliable index to the condition and action of the heart. I deem it a necessary qualification of the practicing dentist to be able to recognize, through the medium of the pulse, serious diseased conditions of the heart. There can be little doubt that failure on the part of dentists to recognize these conditions through the medium of the pulse is responsible for many serious results, especially in the field of anæsthesia.

Our students should be thoroughly learned in this particular line of symptomatology. Let them be taught what intermittence, irregularity, compressibility and dicrotism of the pulse mean. And especially the characteristics of the pulse and their meaning in actual lesions of the heart. Let them understand that if the pulse is quick, sharp, thready, shot-like in its manifestations the patient is likely suffering from aortic regurgitation or is in a highly tense nervous condition, and should be dismissed at once lest serious consequences result.

Familiarity with the various manifestations of the pulse and their meaning as to the condition of the heart and nervous system seems such an important matter to me that I could not forego a brief reference to it.

It is true dental students should be well grounded in the pharmacology, source, constituents, physical characteristics and properties, physiological action—and this, too, in its broadest application, therapeutic value—this being perhaps the most important of all, and dosage, when indicated, of all the various agents to be considered.

An individual consideration of these agents or groups of agents, however desirable, is out of the question in the time allotted to this paper.

In answer to the second question, How best may we teach this? I will reply that no one rule or set of rules can be followed successfully by all. As indicated above, teachers as well as poets are born, not made, and each one will find it necessary to follow the guidance of his own personal capabilities and characteristics.

No method of teaching can be more effective than that which renders the work of study a real pleasure to the student, and surely no other can be more pleasing and satisfactory to the teacher. One year ago I conceived the idea of having a student prepare a paper on a subject pertinent to the department. A number of other students were to be selected to discuss the subject, and were expected to prepare themselves for this purpose. Occasionally during the term an hour was to be given to the class for the reading and discussion of these papers.

When other members of the faculty were told of the plan, all were agreed that it would be excellent work if successful. Some offered encouragement, while others were so pessimistic in their views as to express it as their opinion that failure would result. Never having given much prominence to that sort of a turn in life's affairs, I determined to make the work a success.

A good student, and one whom the balance of the members of the class respected, was selected to prepare the first paper. Five or six others were selected to discuss it. An hour was set apart for the reading and the discussion of the paper. It was noted during the days intervening that these students were in the library at all unoccupied hours, looking up the literature—not only these, but many other members of the class. They were making thorough work of the preparation. And suffice it to say that the exercise was a grand success. The entire class entered heartily into the spirit of the work, and no such thing as failure was to be thought of for a moment.

Several such exercises were held during the term, and I can truthfully say that nothing in my college teaching has afforded me more genuine pleasure or has resulted in more real benefit to the class than has this work.

In my individual work I find the recitation plan of inestimable value, the source of the drugs, their physical characteristics and properties, their chemistry and dosage being almost exclusively taught after this plan. The physiological and therapeutic action of the agents is taught by lectures and by demonstration. However, ofttimes I find the recitation method peculiarly adapted to this division of the work also. We should strive to make our teaching in these two phases of our work just as interesting to our students and as thorough as possible. It is of the utmost importance that we be able to select the proper drug for a certain form of disease. Blundering in this respect is inexcusable, and often results in the most serious consequences. And to understand clearly just how these agents are affecting the various organs through which they are passing on their disease-healing mission is important and necessary to an intelligent use of them.

Soon after assuming the duties of this chair in college work I became especially impressed with the many shortcomings of our various text-books. Indeed, any one who has taken the trouble to look into this question will agree with me when I say that one only has to consult another author than the one that does not suit him to find teaching to suit his own particular fancy, so at variance are the statements of the many different authors pertaining to these various questions in materia medica and therapeutics.

Their lack of harmony as to the relative potency of the various antiseptics and germicides, and their almost total lack of any consideration as to what special agent, under certain conditions of irritation, inflammation, sepsis, or otherwise, would be more desirable to use than another, especially impressed me. I consider it of the utmost importance that students and practitioners shall become possessed of knowledge that is accurate regarding especially the essential oils and other agents we are daily using. We should know their relative value or potency as antiseptics, deodorants and germicides. When we select an agent to place, perchance, in the root-canal of a tooth, it is important that we be familiar with its relative ability to perform the work required of it. Not only this, but I consider it equally important that we should know the action of these drugs on the soft tissue with which they may come in contact. The antiseptics and germicides are poisonous to the vegetable cell. They are used in our work to inhibit the development of and to destroy the germs of disease. Many of them are, as well, poisonous to the animal cell. No one will question the great value of being able to select an agent for a certain case that will destroy the germs present, render the parts aseptic, and at the same time will remain harmless in contact with the soft tissues. Ofttimes it is desirable that an antiseptic or a germicide be used that is also stimulating to the diseased tissues, causing them to yield more readily to the healing influence of the drug. Again, it may be desirable to use one of these agents that imparts a depressing effect upon the soft parts. How are we to make these selections with judgment and certainty without an accurate knowledge of their action when confined in contact with soft tissue?

That I might have something definite to work upon; that I could feel, when I went before my class and made certain statements in this connection, that I could verify those statements by actual demonstration, I have adopted the following plan of teaching these phases of the subject:

During each term a thorough and complete series of tests is made in the bacteriological laboratory and before the class to determine the exact relative value of these agents as antiseptics and germicides. Also an exhaustive series of experiments has been conducted on soft tissue, both animal and human, while in both a pathological and normal state, to determine which are irritating, stimulating or depressing, that we may make our selections for special use with wisdom and certainty.

I believe the same individual who teaches therapeutics should teach special pathology. The two fields are so closely co-related that it is impossible for a teacher to give a comprehensive course of instruction in the one without trespassing more or less freely on the other. Since special pathology has been assigned to me in connection with therapeutics, I find I am able to present the work in a much more interesting manner than I otherwise could do. The students unquestionably gain a clearer and more satisfactory understanding of the various diseased conditions, their pathology and therapeutics, than was formerly possible.

Throughout this brief paper I have hinted at the value of object teaching. I wish now to emphasize this method as strongly as may be. No one can deny that more thorough and satisfactory work can be done by object teaching and actual demonstration, where the nature of the work admits of it, than is possible through the medium of lectures. Suppose it is our purpose to teach the class the effect of a certain drug upon the various organisms, and for purposes of illustration we will consider a cardiac and respiratory stimulant. We go before the class, and in language that is simple, plain and cannot be misunderstood, tell them the manner in which the drug affects the circulatory system and the organs of respiration. That they act directly upon the nerve centers in the medulla and through the medium of the vaso-motor system of nerves stimulate the muscles of the heart to greater activity, thus increasing the force and frequency of the pulse; and that they act, through the medium of the circulation of the blood, upon the respiratory organs, stimulating them to greater activity, thus deepening and lengthening the inhalations. Again, a suitable animal is provided, placed upon the table in appropriate manner, is anæsthetized that it shall not suffer pain, then with the knife and appropriate apparatus these internal organs under consideration are exposed to actual view; the students see them in operation performing their natural functions. Now the stimulating agents are administered and the students see their effect upon these organs. In turn they are taken to the laboratory and required to make the demonstration themselves. Do I hear any one ask which method of teaching will make the profounder impression on the student's mind? Personally I can see no comparison. The simple pleasing word picture as presented by the "successful" lecturer makes but a passing impression on the mind of the average student. This cannot be called knowledge—only transient information. The actual demonstration which he has made and observed makes a deep and lasting impression on his mind and imparts to him knowledge that is his own, and is permanent.

We do not even think of instructing students in anatomy purely by lecturing to them on the subject. The institution to-day that would advocate that would be laughed to scorn. No; we take the student to the dissecting room and there teach the subject by actual demonstration. What would the teaching of chemistry amount to without the laboratory? And the same in regard to the teaching of metallurgy. It is unnecessary for me to follow this line of illustration farther.

It seems to me the statement that object teaching in all branches and departments of our college curriculum which admit of it is the only truly effective method to be employed. We must work into this manner of teaching more and more if we desire to make the best return for the favor and patronage of students. I confidently hope and expect in the near future to see a general move toward laboratory methods along this line in college work.

PRESIDENT'S ADDRESS.*

By John I. Hart, D. D. S., New York, N. Y.

Gentlemen, I assume the position to which you have so generously elected me with, I believe, a full appreciation of its responsibilities and exactions. This promotion at your hands I fully appreciate, and I most heartily thank you for it, and especially for the unanimous spirit you have manifested in its bestowal.

Our thirty-third annual meeting is inaugurated under particularly favorable auspices in that Father Time has treated us with singular consideration during the past year. Reports from the district societies indicate a growth in nearly all, and a retrograde in none. Our own growth in the past has not been commensurate proportionately with the increase in our profession; under the new law, however, we are permitted to elect each year sixteen permanent members. This privilege judiciously exercised will bring into our society more members, and while material prosperity is not our only consideration it is to be considered as well as our technical and scientific advancement.

At the annual meeting of the National Dental Association, held at Old Point Comfort last July, it was resolved that a special committee of five be appointed by the president to consider the expediency of co-operating with the public schools in teaching "Good Teeth, Good Health." A communication has been received from the chairman of that committee, which at the proper time will be read by our secretary, and I would ask that at some time during our deliberations this subject shall be taken up to ascertain whether we, of the Empire State, desire to co-operate in this work. In Sweden a systematic study of this kind has been made and the results reported to the Third International Dental Congress, held in Paris last summer, by Dr. Elof Forberg, of Stockholm.

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*Read before the annual meeting of the New York State Dental Society.

Since our last meeting the army examining board, for which the entire profession put forth so much effort, has become an established fact. The bill as passed, is not up to the standard that in many respects it might be; but, at least, it is a step in the right direction, and it is to be hoped that the proper officials will recognize the weak elements and correct them.

A special committee, appointed at the last meeting, for the purpose of considering the advisability of the appointment of an executive council, will report, and the matter will come up for your consideration. Two days devoted by this society to its deliberations is not too much of a sacrifice to ask of this body; and I trust you will all remain to the close of the meeting, so that the full body will be present to consider all the matters that are brought before us. We can economize much time by commencing all sessions promptly at the time indicated by the chairman of the business committee. I would suggest that at the close of the first session each district delegation shall meet and nominate two permanent members; a member of the law and legislative committees; and the delegation of the first and third districts, members for the board of examiners. I shall refrain from anticipating in any particular the reports of any of the committees, as the work performed by each is made the subject of a special report and any redundancy in our transactions is to be deprecated.

LAWS REGULATING THE PRACTICE OF DENTISTRY AND THEIR ENFORCEMENT.*

By W. A. Purrington, LL. D., New York, N. Y.

Thirty-three years ago the New York legislature enacted Chapter 152 of the Laws of 1868 "to incorporate dental societies for the purpose of improving and regulating the practice of dentistry in this state." That statute, the charter of this society and the district societies, created from their membership a state board of censors authorized to examine dentists in regular practice at the date of the passage of the act, persons who had received diplomas from dental colleges of the state and those who had studied and practiced four years with accredited dentists. The society was empowered to grant its diploma to those recommended by the board, but no one was compelled to submit to examination and the diploma, since it conferred neither license nor title, had no particular value.

This act, while it enabled dental societies to incorporate, failed to regulate the practice of dentistry and confine it to licentiates.

Two years later Chapter 331 of the Laws of 1870 authorized the society to grant the degree of Master of Dental Surgery, conferment of which by any other body was forbidden, and made it a misdemeanor for any one falsely to pretend that he held the certificate of license or diploma of any dental society of the state or any incorporated dental college—thus adding value to the society's diploma, but assuming, what was not a fact, that license was required of dental practitioners, whereas in truth the practice was free to all.

Here the law rested until 1879, when, by Chapter 540 of that year, license was for the first time required of dental practitioners. Those already engaged in the practice on or before July 1st of that year were allowed to continue in it; but every one else was forbidden to embark therein without a diploma or certificate either from the society or from the faculty of a dental or medical college recognized by the society as reputable. Unlicensed practice was made a misdemeanor punishable by fine of not less than $50 nor more than $200, and all practitioners within the state were required to register within sixty days from the passage of the act. No penalty, however, was provided for failure to register nor was registration required of any but those already in practice—the future being thus inadvertently unprovided for. But by Chapter 376 of the Laws of 1881, extending the time for registration to sixty days from the date of its passage, that formality was required of all persons thereafter licensed.

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* Read before the New York State Dental Society, May, 1901.

Thus it appears that the system of licensing dentists in this state was thirteen years, from 1868 to 1881, in getting a start, so to speak. Since the latter year the law has been amended by Chapters 280 of the Laws of 1888, 337 of 1889, 528 of 1892, 661 of 1893 (whereby the dental law was made part of the Public Health Act formulated by the late revisory commission, and, to some extent, undoing the work theretofore accomplished), 262 of 1895, 297 of 1896, 247 of 1897, 353 of 1898, and, finally, by Chapter 215 of the Laws of 1901.

To recite in detail the reasons necessitating these frequent amendments and the precise changes through which the law has evolved into its present and, let us hope, stable condition would weary you and consume my whole time without compensating advantage. But those familiar with legislation know that few laws can be framed in the first instance upon ideal lines; that there is always some conflict of views among those interested, but not always full knowledge of existing evils or the best way to remedy them; that no matter how carefully a bill be framed it is more than likely to be changed in its passage through the legislature either by open concessions to opponents, by secret devices, or even by changes of phrase that are quite inexplicable; thus, for example, in the law of this year your committee's phrase, "The existing division of the State Board of Dental Examiners into four classes and their terms of office shall continue," has been quite unnecessarily altered to read, "The existing division of the State Board of Dental Examiners shall be divided into four classes and their terms of office shall continue," a performance in division that your committee was not guilty of.

One must remember, moreover, that laws of this kind are necessarily educational and become perfected by a gradual evolution, carrying public opinion along with them.

It is sufficient then to recite the salient features of the present law.

(1) The statute consolidates the separate laws specifically affecting the dental profession, those relating to dental societies as well as those regulating practice.

(2) The variable and unsatisfactory standard of license, a college diploma, is done away with. Every license now must issue from the regents of the university and can be granted only to one who has passed the State Board of Dental Examiners after receiving a high school education, or its equivalent, and a diploma from a dental school or a medical school, the course in which latter he has supplemented by a two years' study of dentistry. An apparent exception to the rule is made with reference to the much-desired state interchange of license and in analogy with the regulations of admission to the bar. It empowers the regents, upon the state board's recommendation, to license graduates of six years' practice in other states and licentiates of other state boards; but this exemption is apparent, as already said, not real, for the board can only recommend those who have received a preliminary and professional education equivalent to that required of all candidates for license. The exception, moreover, is much less liberal than that made in favor of foreign attorneys seeking to practice at our bar, who are admitted without examination upon proof of three years' practice in the highest court of another state. The reason of these rules is obvious; one who has been engaged for several years in the practice of his profession after graduation may have become a person of much greater attainment than he was when his diploma was conferred and yet find it difficult to pass examinations upon matters that were at his fingers' tips when fresh from the school. It may well be doubted if any of us could now pass successfully our freshman papers. What the law aims at is the admission of competent men to and the exclusion of incompetents from the profession. If a system—which possibly may be arrived at some day—were now practicable, whereunder licentiates of any state might practice in every other, we should have a most fortunate condition of affairs; just as it would be desirable to have uniform laws regulating medical practice, marriage, divorce and other quasi-public relations; but these desiderata are at present unattainable because of the varying standards of morals and education in different jurisdictions and the lack of power in the national Congress to legislate upon such matters for the states.

(3) No dental degree can now be conferred in this state except Doctor of Dental Surgery; and that can be granted only to those who either earn it in professional schools or receive it in lieu of the master's degree formerly conferred by this society after examination assured to be equivalent at least to those of the schools.

conferring only the doctorate. It should need no argument to prove that a professional degree representing technical attainments should not be given *causa honoris* or *ad eundem*; and experience has shown that it is these unearned degrees conferred *in absentia* that have been so widely sold by so-called colleges of the Buchanan and Delavan stripe.

(4) Even licentiates may not practice dentistry unless registered in the county wherein they practice; the purpose of this rule being to spread upon the public record the practitioner's authority and afford opportunity to investigate it.

(5) Licenses may be revoked for unprofessional or immoral conduct, and the practice is forbidden to convicted felons.

(6) Non-licentiates practicing dentistry, or holding themselves out so to practice, become misdemeanants punishable by fine of $50 for a first offense, and for a second offense by fine of not less than $100 or imprisonment, or both. The like penalty is provided for failure of practitioners or their employees to post their names in or about their offices—a provision necessitated by the custom in so-called "dental parlors" of employing unlicensed men designated by numbers or initials.

(7) Purchase or sale of diplomas or other documents evidencing license or right to examination or registration, alteration and fraudulent use of such writings, practice of dentistry under false and assumed names, false assumption of medical or dental titles or titular letters, and false personation of candidates at preliminary or professional examination are made misdemeanors punishable by fine of not less than $250.

(8) False swearing to statements required by the statute is made perjury.

(9) To courts of special sessions is given jurisdiction to try in the first instance misdemeanors under the act.

(10) This society is authorized to aid in enforcing the law and to receive fines and forfeitures imposed thereunder.

Thus we see that the prohibitions of the act are comprehensive, and the penalties for its violation sufficiently grave to give adequate sanction to the law, which, if obeyed, voluntarily or by compulsion, would leave little or nothing to be desired. But that may also be said of the ten commandments or of almost any penal code. If to make men good it were enough to enact, "Thou shalt not," the millennium would have been here long ago. But notwithstanding the commands from Sinai, "Thou shalt not kill" and "Thou shalt not steal," murder still occurs and a considerable number of dishonest men are at large. And yet there are those who with simple faith expect merely human law to accomplish more than the Divine law has effected; to prevent not only sporadic acts criminal *per se*, but customary acts, the commission of which, in the absence of statutory prohibition, is lawful. Our statute books grow more and more encumbered with ineffective and, therefore, undesirable laws regulating the ordinary actions of men; and it behooves us all to inquire carefully whether a statute in the making of which we share be necessary and likely to do more good than harm.

Let us consider then the reasons for regulating dental practice by law and the methods and results of enforcing such a statute.

Why should any one be forbidden to practice dentistry? Certainly not, or, at least, not primarily, in order to benefit dentists as a class, to reduce competition, to enable spiteful rivals to injure one another or yet to enforce canons of good taste.

The statute is an exercise of the so-called police power, under which the state may within constitutional limitations enact laws for the protection of public health, welfare and even enjoyment. Both legislatures and courts have stretched this elastic, indeterminate power to its verge; and the growing tendency to regulate all business by commissions, boards and penal statutes is to be jealously watched lest, under the guise of protecting public welfare, individuals seek advantage for their trades or callings at public expense and their personal advantage at the expense of their callings or trades.

If dentistry were only a mechanical art or trade—and the courts in reporting cases have held it to be both one and the other—I should not find easy the defence of that legislation in procuring which I, as your counsel, have had some part. But dentistry is not a mere handicraft or commercial venture. The dentist of to-day is, and the future practitioner will be, in a still higher degree, something more than a skilled worker in metals and amalgams. Mechanical excellence in filling teeth and artificially supplying their loss is not, or, at least, should not, be the limit of his functions.

It is not for me, a layman, to tell you what your profession is or should be, but as a lawyer I may tell you how the courts have regarded it.

In Lee vs. Griffin (30 L. J. Q. B. 252, A. D. 1860) a dentist sued an estate for £21, the value of artificial teeth made for decedent who died before their delivery. The defence was that the contract was for the sale of goods and, therefore, under the statute of frauds, not enforceable, because not in writing. Plaintiff argued that his contract was not to sell material of small value, but to furnish skill in working it up; and that he was comparable to an artist, the value of whose products depends upon his skill and not upon the substance to which it is applied. The court, however, said that the contract was for the supply of goods and that the dentist was to be compared with a tailor supplying cloth for a suit requiring measurement and fitting. In France about the same time (1858) the Tribunal of Commerce in Paris took a contrary view and held that a dentist could not be sued before it for the value of gold and platinum used in his practice upon the ground that he was not a tradesman.

In our own country the case of Whitcomb vs. Reid (31 Miss. 567, A. D. 1856) followed the French view and held that a dentist's instruments were not exempt from levy of execution as mechanic's tools. The court said: "A dentist cannot be properly denominated a mechanic. It is true that the practice of his art requires the use of instruments for manual operations, and that much of it consists in manual operations; but it also involves a knowledge of the physiology of the teeth which cannot be acquired but by a proper course of study, and this is taught by learned treatises on the subject and as a distinct or limited part of the medical art in institutions established for that purpose." The court argued further that there was no more reason to classify dentists as mechanics because of their use of instruments, than similarly to classify general surgeons who use the knife and saw. On the other hand in Maxon vs. Perott (17 Mich. 332) involving the same point, Judge Cooley, a most distinguished jurist, held, to the contrary, that dental instruments were included in the exemptions of mechanics' tools from levy, and said: "A dentist, in one sense, is a professional man, but in another sense his calling is mainly mechanical and the tools that he employs are used in mechanical operations. Indeed dentistry was formerly purely mechanical and instruction in it scarcely went beyond manual dexterity in the use of tools; and a knowledge of the human system generally and of the diseases which might affect the teeth and render an operation important was by no means considered necessary. Of late, however, as the physiology of the human system has become better understood, and the relations of the various parts and their mutual dependence become more clearly recognized, dentistry has made great progress as a science and its practitioners claim with much justice to be classed among the learned professions." But, nevertheless, the court said that so far as tools are employed the operations of the dentist are purely mechanical—a proposition from which we may well dissent. It is worthy of notice that in both of these cases dentists were seeking to have their calling classified as a trade in order to avoid payment of their debts, and that the judges were taking a higher view of the profession than the dentists themselves.

The question of the status of your profession arose again in 1893 in the case of Flickinger vs. Fisher (21 S. W. 440, 593) wherein the Missouri Supreme Court held, voting four to three, that dentists were not included in the statutory exemptions of "medical practitioners" from jury duty. The dignified dissenting opinion quoted approvingly the address of N. S. Davis, M. D., president of the American Medical Association, in which he took the ground that dentistry has become an important part of medical science; the prevailing opinion loses weight by the flippancy of the argument that turned the nearly balanced scale of justice.

Again in 1897 the question came under discussion in North Carolina; one of your calling having done for a trifling gain that which begot another precedent characterized by its display of judicial humor, to the effect that dentists are not to be classed among physicians. One Smathers, a dental practitioner, prescribed a pint of whiskey on Sunday, ostensibly to relieve the aching tooth of Mr. Stagg. McMinn, an apothecary, sold the whiskey and, being prosecuted under the excise law, relied upon this prescription of "Dr." Smathers as a defence—physicians being allowed to prescribe whiskey in that state on the Lord's day. The court not only held that a dentist is not a physician within the meaning of the statute, a conclusion that was doubtless correct, but went further and intimated that this was very fortunate, inasmuch as every normal North Carolinian has thirty-two teeth, all of which would be likely to ache at once if the dental prescription for one toothache were a pint of whiskey. But while we admit the court's conclusion that a dentist is not a physician, in the general use of the term, we may well deny its proposition that the duties of a dentist are limited to the "manual or mechanical operations on teeth," and that, therefore, "whenever the use of liquor is necessary, it being a remedy to act on the body, and only indirectly in any case for the teeth, within the purview of the statute it must be prescribed by a physician to authorize its sale on Sunday." The judicial mind was evidently convinced that Smathers was not prescribing for toothache but for thirst, and it may well be doubted whether the court would have reached the same conclusion if the dentist had prescribed an ounce of whiskey for actual prostration after a *bona fide* operation; there can be no doubt, on the other hand, that a physician of North Carolina prescribing whiskey on Sunday as a tipple would abuse his professional privilege and violate the law in spirit, if not letter, quite as much as did Smathers. Perhaps the most recent case in point is People vs. DeFrance (104 Mich. 563), wherein it was held that a dentist "is not within the terms or the spirit" of the statute prohibiting a physician to reveal confidential communications of a patient. And here again, while admitting that the decision may be sound in so far as it expounds the letter of the statute, I find it impossible to agree that the dentist is not within the spirit of the law. The purpose of the statute is not to benefit medical men but to enable patients to consult them with confidence that necessary disclosures will not be revealed. Such being the purpose of the law, is there any reason in common sense why a dentist should be permitted to disclose what he has learned in examining the oral cavity while a laryngologist or rhinologist would be forbidden to reveal the same condition? To state the proposition is to refute it. The dentist is distinctly within the spirit of the law, and will be within its letter when it is appreciated that his services are those of a medical specialist.

But although we find these decisions excluding dentists from the category of physicians it does not follow that they are to be always excluded even in the law from classification as medical men; and whenever the question has arisen whether a physician is entitled to practice dentistry, the courts, so far as reported cases show, have answered affirmatively upon the theory that dentistry is a department of medicine; although I believe there have been contrary opinions expressed from the bench. Very recently in the Rhode Island case of State vs. Beck (43 Atlantic 366) it was held that although the dental law of that state "does prohibit physicians as well as all other persons from practicing dentistry without first obtaining the required certificate," still the statute should be construed in connection with that one regulating the practice of medicine and surgery. "Dentistry," said the court, "is now a well recognized branch of surgery. A dentist is a dental surgeon. He performs operations upon the teeth and jaw and, as incidental thereto, upon the flesh connected therewith. His sphere of operations then as before intimated is included in the larger one of the physician and surgeon;" it was accordingly held that dentistry being a department of general medicine, any physician might practice it notwithstanding the prohibition of the dental law.

Again whenever a dentist has been sued for damages on account of alleged malpractice, the courts have applied to him the standard applicable to physicians and surgeons and not that to which tradesmen and artificers are held (Simonds vs. Henry, 39 Me. 155). And even in North Carolina this rule was adopted in an action for malpractice against one Smathers, probably the same who prescribed whiskey with the result of obtaining the ruling that dentists were not physicians (McCracken vs. Smathers, 29 S. E. 354).

To me it seems too clear for further argument that he who undertakes to treat abnormal conditions within the oral cavity, call him dentist, odontologist, stomatologist, what you will, is, or should be, a specialist in medicine. Certainly this is true if we are to accept as accurate these words of Dr. Garretson addressed in 1860 to the Pennsylvania Association of Dental Surgeons: "When years back before this association I have spoken of anæmia, chlorosis and kindred conditions as a source of dental caries, I have been met with rebuke for traveling outside of my profession. Let me now, gentlemen, add my mite to the experience of to-night by affirming that I believe I have saved more teeth by constitutional treatment than ever I have by mere manipulation." These words were uttered forty years ago and since then what a marvelous advance has been made in medical science. If the dentist of to-day is a mere mechanic, then he is not to be held responsible for negligence in omitting those precautions and measures required in modern antiseptic surgery; and this proposition I do not suppose any one will maintain. Undoubtedly there is a certain inharmony between medical and dental laws; we have seen one court deny that the dentist is included within the category of "medical practitioners," another hold that physicians may practice dentistry because it is a department of medicine, and yet another affirm that dentists are not compelled to guard the confidence of their patients as are all other medical practitioners. Certainly the line of demarkation between what the dentist may lawfully do in systemic treatment and operative surgery is very ill defined. But the solution of the legal problems arising from these vague conditions is found when the operating dentist is, as he probably will be generally in the near future, first graduated in medicine and then specialized in dentistry. Such an one is and will be authorized to practice as freely as the otologist or any other medical specialist, and is no more to be excluded from the category of medical men than is the orthopedist to whose practice mechanical appliances are necessities.

It is then because your work is essentially of a surgical nature and because the mistakes of the most skillful mechanical operator without physiological and medical knowledge may entail life-long injury upon the patient that I find justification for dental legislation. For if any calling may be properly regulated by law with advantage to the public welfare it is that of medicine. Reason and experience expressed in terms of ordinary common sense establish that the repairing of the human engine cannot be safely intrusted to one who is ignorant of its mechanism. I do not for a moment contend that a college course, or any course of instruction, will make of a poor student, of an unobservant person, a good physician, an able surgeon, a skillful dentist. You cannot grow figs on thistles. Nor is the clever man of books necessarily an able diagnostician or skillful operator; he may be inferior in both regards to one less learned in theory. But genius itself cannot become fitted to treat our often infirmities without study, observation and training. And because it would be impossible and undesirable, even if constitutional, to prescribe by law methods of applying scientific knowledge to medical practice, the state is justified in refusing to allow any one to enter upon that practice without proof that he has followed a course of study such, both by its duration and nature, as to give him fairly adequate knowledge of the conditions with which he may have to deal and the proper treatment thereof, and to start him in his profession equipped to gather knowledge from the future study and experience of his lifetime. Dentistry then is regulated by our statutes only because it is a special department of medicine. In so far as it is a mere mechanical art the law does not attempt to regulate it, and the worker upon inert matter in the laboratory is neither required to take out a license nor is he subjected to any pains and penalties except when emerging from his workshop he undertakes without proper qualification to operate within the oral cavity.

It would be superfluous for me to multiply for your instruction cases wherein medical knowledge on the part of the dental practitioner has proved necessary and desirable in the patient's interest. But upon the assumption that my words may pass beyond this hall to laymen holding the foolish notion that the ideal dentist is a mere filler of teeth in a workmanlike fashion, I may mention one or two cases within my own knowledge.

The enactment of the dental law in France was preceded by long and instructive discussion before the legislative committees wherein it was pointed out that serious consequences might ensue to the human system generally from injudicious dental work wrought with great mechanical skill, as the application of well made plates over lesions, filling of teeth over exposed pulps and so on. A man, of whom I know, suffered from a condition of the tongue diagnosticated as cancerous by a surgeon who appointed a date for its excision. In the meantime the patient visited a dentist, who, upon examination, satisfied himself that the morbid condition was not cancerous but a traumatic ulcer due to rough edges of the teeth. These he filed down and applied emollients to the wound; the patient slept that night for the first time in days. Subsequent treatment demonstrated the mistake in the original diagnosis and restored normal conditions. The operator here, a member of your society, was a graduated physician who had specialized himself as a dentist. A leading surgeon of New York to whom I mentioned the case told me that he had just sent home to the South a woman who had been sent to him for the excision of her tongue, diagnosed to be in a cancerous condition. He had taken her to a dentist and caused certain teeth to be extracted; she was restored to the normal and enabled still to get the last word in discussion. A famous neurologist, whom I knew, treated for a long period with anodynes a young woman suffering from persistent facial neuralgia. Finally he sent her to a dentist, who, upon examination, found that the gum had closed over the fragments of a tooth broken in a clumsy attempt at extraction and remaining as a source of nervous disturbance; with their removal the neuralgia ceased; but the morphine habit remained.

Such being the reason justifying dental legislation, we may now consider the method of its enforcement—an unenforced law being worse than none—a pitfall for the unwary, not a protection to the public.

There has been surprisingly little dissent on the part of legislators, the executive, the courts and laymen generally to the principle of dental legislation. And in the great cities where individuals are lost in the multitude it has been comparatively easy for this society to enforce the law. In Greater New York conviction has followed an arrest almost with certainty; a result largely due to the fact that your representatives have prosecuted no case unless satisfied that the accused was willfully violating the statute. Where there has been doubt on this point the unlawful practitioner has been advised of the statute. Wherever it has seemed that the aim of the law would be attained as well by clemency as severity, proceedings have been discontinued upon affidavits by the accused that he would in future desist from unlawful practice; affidavits, I am sorry to say, more often broken than kept. Your agents have been strictly charged to use none of the obnoxious methods of those who are called by the French "*agents provocateurs*;" that is to say, they have been forbidden to procure their evidence by falsehood or by inducing persons to commit a breach of the law. They have been charged with the duty of finding actual patients; and the testimony of an agent to acts of practice upon himself has only been used when corroborating circumstances have been such as to insure the truthfulness of the detective's statement. Those in your employ have been paid a fixed sum in no wise contingent upon the number of arrests made; in short, every effort has been made to do away with or abate those evils which every candid man must admit are incident to the enforcement of such laws by the use of detective agents unless those agents are strictly supervised. If the law has been ever abused or perverted from its true intent by those acting in your behalf, no proof of such ill-doing has been ever furnished to your representatives.

But although the dental law is readily enforceable in great cities as I have said, conditions are very different in smaller communities, villages, towns and even cities of the second class. The good people of such bodies politic assent through their representatives at Albany to the legislation we are discussing. They approve the general principles that have been enunciated; but, when it comes to punishing the illegal practitioner, they nullify in the jury room or box the law which they have made, and declare that the unqualified man shall not be disturbed and that the person capable of filling a tooth is a sufficiently good man to practice upon them. Three modern instances will serve to illustrate what has been said.

In 1889 one Barnes opened a dental office in Herkimer; he was neither registered nor entitled to register; he had failed to pass his examinations at the Boston Dental College; nevertheless in the Supreme Court on November 21, 1887, he falsely swore, in order to qualify as an expert witness in the case of Merville vs. Merville, that he was a graduate of that college. Proof of this false swearing, of his practice and lack of license or registration were presented to the district attorney and by him to three grand juries, the last one of which was charged by Mr. Justice Kennedy of the Supreme Court on April 6, 1891, in terms too explicit and stinging to be misunderstood, that the function of a grand jury was to pass upon the evidence before it and find a true bill if the unexplained facts showed the commission of a crime. No grand jury could have a simpler state of facts to consider than these cases present—namely, has the accused practiced dentistry or held himself out so to practice and is he registered and licensed. Notwithstanding the plainness of this issue not only did these three grand juries refuse to indict Barnes, whose practice and nonregistration were demonstrated, but the local press applauded their plain disregard of duty; The Herkimer *Democrat* and Little Falls *Times* notably. The former on December 11, said among other things: "There is no doubt but what Barnes is violating the law, but the law (portions of it) is so unjust and obnoxious that it should be amended without delay. . . . Mr. Barnes remains here and will continue his practice and he is backed by a very large circle of friends and the best people in the village." The latter journal said: "He may have violated the technical letter of the law but everything goes to show that he did not offend against its spirit and intention. No grand jury ever impaneled in this county would have found an indictment under such circumstances." Certainly we could not have more explicit admissions that the grand jury had disregarded its sworn duty in view of the "circumstances," which were simply these so far as can be ascertained: The accused was a man of plausible address, with a varied career, the details of which were unknown to the neighbors; he was reported to the society by a fellow practitioner whose only authority for registering was that he had been in practice prior to the law of 1879. Personally the accuser appears to have been less popular than the accused, to whom he had been opposed, as an expert in the Merville case. In short the grand juries and the newspapers taking sides in the quarrel of the two men, disregarded the facts, the law and the duties of good citizenship. The metropolitan press took a different view of the case; The New York *Times* of December 8, 1889, spoke of it as "A curious instance of a grand jury allowing sympathy factitiously worked up to take the place of evidence." And again on April 12, 1891, said: "He (Barnes) may or may not have been made a competent dentist by the practice that he has attained through violating the law, but the more important question is whether laws are made to be enforced and whether the oath of grand jurors has any binding effect when a case is brought before them in which they prefer not to find an indictment, however conclusive the evidence may be that the law has been violated. As Judge Knapp of Hudson County, N. J., said in the case of a refusal to indict pool sellers: 'A habitual disregard of law by officers who should enforce it is the most pitiful spectacle that can be presented to a community.'"

An equally illustrative and more amusing case occurred in May, 1889, at Warsaw. Two dentists went there to engage in practice and found an unlicensed man, a native of the place who they said had originally followed the trade of a wheelwright. However that may be they reported him to the district attorney, who placed the case before the grand jury. That intelligent body having sent for the registry of the county clerk found that neither the accused nor his accusers were registered; whereupon with a joyous sense of humor, they indicted the accusers but threw out the bill as to the accused.

The third case is very recent. A man named Walker was reported about two years ago as practicing dentistry without license in Lansingburg, then a suburb but now a part of Troy. A letter was written to him warning him of the law, and, as no further complaint was received, it was assumed that he had desisted from his practice. Eventually complaint was renewed, and, after further warning to Walker, proceedings were instituted against him, and in February last he was arrested and taken before Police Justice Abbott H. Jones of Troy, who held him to answer to the grand jury before which the district attorney subpœnaed witnesses prepared to prove the following facts; that Walker had practiced and was practicing openly; that he had no license, was not lawfully registered and, in his attempt to obtain a legal status as a dentist, had made conflicting statements under oath, even as to his own age, all of which could not possibly be true.

In more detail the facts of the case are these: On August 19, 1895, Mr. Walker entered an affidavit upon the registration book of Rensselaer County wherein he swore that he was then thirty-three years old and that his authority to practice was a diploma of the Wisconsin Dental College dated May 5, 1883. This diploma was never a license. The college has never been rated in this state as reputable, and the county clerk should not have suffered the registration, which is annotated on the margin as irregular. You will note that if on August 19, 1895, Walker was thirty-three years old, he must have been twenty-one years old on May 5, 1883, the date of the alleged diploma—the earliest age at which a diploma can be conferred. After the society instituted proceedings, Mr. Walker, realizing the nullity of his registration, had recourse to the legislature for one of those special enactments which it occasionally grants to individuals and which our present governor most laudably vetoes. Failing here Mr. Walker, without any notice to this society, applied *ex parte* on March 12, 1900, to Mr. Justice Fursman for permission to file then one of the students' certificates which were allowed to be filed prior to August 1, 1895. To procure the order Mr. Walker swore to a petition in which he said that he was then thirty-one years old, that is to say, two years younger than he had sworn himself to be on registering five years before; that he began to study dentistry with A. W. Gabeler of Pittsfield, Mass., in November, 1888; that is to say, more than five years after the date of the diploma which he swore in 1895 was his authority to practice, and which must have been conferred upon him, if this last oath as to his age was true, at the early age of fourteen. He went on to swear that after leaving Addison W. Gabeler in 1892 he removed to Troy and remained a student of Charles H. Gabeler until July 1, 1889, which is perhaps meant to be 1899, with the exception of the year 1895, when he was a student of C. A. Hill, of Albany. There is not a word in the petition concerning the Wisconsin diploma; on the contrary he swears that he began to study dentistry five years later than its date. Not only were these conflicting and necessarily false oaths made, but the book of registration has been altered. It now appears on that record that the diploma which Walker originally swore was granted in 1883 was granted in 1893, the change being effected by scratching off the lower part of the third eight in the former date, a change visible to the naked eye without the aid of a magnifying glass, which, however, was furnished the grand jury. But in altering the record, the date of the diploma, no corresponding change was made for age, so that the record as it now stands shows that Walker did not receive his diploma until he was thirty-one years old. In fact one of the witnesses who went before the grand jury says that the accused admitted to him purchasing the document for $50.

The facts established beyond dispute that Mr. Walker was not only unlicensed and unregistered but that he had made false oaths that under the statutes seem to constitute perjury. Nevertheless the grand jury of Rensselaer County refused to indict Walker as the Herkimer grand jury had refused to indict Barnes; and the former violator of law, like the latter, found aid and comfort in the local press.

These cases, which have been subjects of previous reports to your law committee well illustrate the difficulty encountered outside the great centers in enforcing laws of this nature. To my apprehension they show that these grand juries, made up, beyond doubt, of well meaning persons, had no very keen appreciation of the fact that the purpose of the law is the protection of the public and no very sound comprehension of the extent to which education and training are necessary to equip dental practitioners of the present day, and furthermore that they allowed themselves, as did the newspapers, to be influenced by an erroneous idea that the prosecution was persecution; the result being that, without due and careful investigation—for I am loth to believe that either the grand jurors or the newspapers would have assumed such positions upon impartial consideration of the facts—they assumed that the statute was set in operation for private not public objects and espoused causes demonstrably wrong at the sacrifice of their duty as citizens. The result of these prosecutions is one more demonstration of the need of educating the public mind to the functions of the law and the true nature of the dental profession.

Indeed in my judgment the chief value of the law is, so to speak, prophylactic, as indeed is that of any penal law. Most unfortunately the conviction of a law breaker does not as a rule cure him of wrong doing. On the contrary it is apt to confirm him in his evil ways. The burglar comes out of the penitentiary after years of confinement and robs on the first occasion. The man forbidden to follow a certain calling without license being caught and punished not infrequently looks upon his fine as a license fee and repeats his offence as soon as he leaves the court room; exercising to be sure more caution and limiting his practice to cases that he considers least hazardous. But are we for such reasons to join with those who argue that, because the majority of judgments in debt, are unsatisfied, we should abolish all laws for the collection of debt in order to render men careful as to whom they credit; or those others who, discouraged by the constant repetition of crime, suggest the abolition of all punishment and the substitution instead of "moral suasion?" I think not; I think that medical and dental legislation has had a proven value. Certainly coincidently with it, and I doubt not largely on account of it, the standard of professional education has been greatly advanced. Stripping the diploma of its licensing power stimulated the colleges to demand higher qualifications for the degree than they required in the old days when faculties were loth to refuse diplomas because of an unconfessed feeling that the payment of students' fees established a lien, as it were, upon the license and that it would be cruel to refuse the parchment that entitled a student to earn his living. It was fortunate for the colleges themselves that this temptation to maintain low standards and belittle their credentials was removed from them. It is fortunate for the community that the men graduated from our leading colleges to-day are far better equipped than those who went before them. And so although discouragement in well doing comes at times to all men and they ask what profit there is in all the labor they do under the sun, there is no need to be discouraged over the result of your efforts. We hear of the men who violate the law, but we can only guess at the number of those—indeed we cannot even guess at it—who are turned by the knowledge that this law exists into the paths of study in order to equip themselves for the lawfu exercise of their chosen profession. No parent is willing to have his child marked as a criminal; and no right-minded youth wil take the chances of being stigmatized by conviction in a crimina court when he knows that by reasonable effort and sacrifice he ca fit himself to do lawfully that which unlawfully done brings no only risk of punishment but a closing of the path to professiona distinction and social position.

Such being the value of these laws, it would seem clear that thei enforcement according to their spirit and with clemency is a benefit to the community and to the professions affected. The law that you undertake to enforce bids fair to and, as I believe, eventually will establish dentistry before the courts as a most important department of medicine, and, as already said, it seems to me manifest that in the not remote future the operating dentist will qualify himself in general medicine as every other medical specialist does; and as the dentists would have done long ago except that the operative part of the practice requires unusual mechanical knowledge and skill while at the same time the very fact that it has been regarded as largely mechanical has led the public, as represented by the grand juries I have mentioned, to consider that any charlatan with sufficient mechanical skill to fill a tooth is necessarily a good dentist.

On the other hand if the real object of the law, the public protection, be forgotten, if it be enforced for selfish purposes, without due discrimination, in a spirit of pitiless logic or for private ends, there will result necessarily loss of public approval and the eventual repeal of the statute. This is not mere prophecy, it is a statement of what has happened with respect to medical laws both in this country and in England. Whenever those laws have seemed reasonable and just they have been accepted by the people; whenever they have seemed to be used for class purposes they have been wiped from the statute books.

There is one feature of your enforcement of the law not to be overlooked. It is the protection afforded to the individual accused. No premium is offered to informants, as under the laws which gave a portion of the fine to any prosecutor. There is no prosecution for he sake of collecting fines. So well is this understood in Greater New York that when individuals make charges before magistrates hat the law has been violated, those officials refer the complainants o the society for investigation of the facts. When this society prosecutes, the accused, in case he be arrested without probable cause, has a remedy in an action for damages against a responsible defendant; and because such actions may be brought against you or your officers—and in fact several have been unsuccessfully brought—self-interest demands a degree of care in investigating complaints that serves to safeguard the accused against groundless prosecutions.

One other point and I shall have finished. Other societies that aid in the enforcement of particular laws—auxiliary governmental agencies, to adopt a recent phrase—solicit and receive large contributions from the public in aid of their work, in addition to the moneys collected under the statutes enforced. But this is not true of the professional societies. Bar associations, when they take action to purge the legal profession, defray all expenses from their own treasuries. Medical and dental societies, which have slenderer purses and take much more frequent action, receive no public aid except the moneys collected under the statutes which never approximate the cost of their work. In so far then as this law regulating dentistry is to the public advantage, you are doing at your own cost to a large extent work for the common good. Your particular reward is that you are at the same time advancing the status of your profession and paying that debt which every professional man is said to owe to the calling that he elects to follow.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held in the Schiller Building, May 7, 1901, with the President, Dr. A. B. Clark, in the chair.

Dr. R. Ottolengui, of New York, read a paper (by invitation) entitled, "Immune Areas and Their Relation to Cavity Preparation."

DISCUSSION.

The discussion was opened by Dr. E. K. Wedelstaedt, of St. Paul, Minn.

Before I enter into the discussion of the ideas brought for our consideration by the essayist, I beg your kind indulgence for just one moment. I desire to thank you for the high honor you have conferred upon me by the invitation to come and take part in this discussion. Chicago is to-day the center of dentistry of the whole world. It is also the center of education, in so far as this relates to the professions of dentistry, surgery, medicine and law. Within the next ten years it will be everywhere recognized as the center of academic education as well. The most progressive and advanced men in our calling live right here and in this great Northwest. The honor of being permitted to talk to you is the greatest of my life, and I thank you most cordially for your kindness.

I wish that I might have had a copy of the essay at an earlier date. A copy reached me a week ago last Friday, and I have not had time since receiving it to look up such data as the essayist wishes, and therefore cannot answer the essayist as he desires. I have studied carefully, however, the ideas as he has seen fit to write them out, and must congratulate him on being in the class with the "extenders." From what the essayist has said, I believe that he and I, notwithstanding the fact that we have the same end in view, differ somewhat regarding our methods of cavity preparation. But then, that is not such a serious thing.

Among the fundamental ideas of dentistry we find the eradicating of diseases of the teeth and restoring them to a condition of health. It is necessary for us to repair such mechanical and other injuries as may affect the human teeth and, if possible, to place them in a state in which such injuries will not ordinarily again take place. Having stated the proposition fairly, let us to the contents of the essay.

I think we can all admit that where one-half or two-thirds of a tooth has been lost through the ravages of decay, its usefulness may be impaired, but I cannot bring myself to accept in full the reasoning of the essayist. For example: Suppose we fill a cavity in the central pit of an upper molar that measures 2x2 mm. and has a depth of 2½ mm., is the usefulness of that tooth impaired? I think not. The existence of the cavity only shows this tooth to have been in imminent danger, but that danger has passed. Suppose the mesio-distal and the linguo-buccal diameter of such a cavity is increased 2 mm., is the usefulness of that tooth impaired? I think not. On the contrary, by repairing the fault which permitted the cause of decay to act, the tooth is placed in a condition in which it can perform its functions fully; this has a tendency to, and does in fact, greatly increase its usefulness. Even where the entire crown has disappeared and the root is in a condition of health, artificial attachments are made which, when adjusted to such a root, more often than not, serve every practical purpose for years, and in many cases throughout the life of the patient.

The essayist asserts that a tooth filled for a person at the age of 20 will have served its owner 10 years longer than the one which was filled for a patient 10 years of age. At the same time he grants that when the tooth is once filled, its life will be the same as if it had never been filled. I cannot reconcile the two propositions. In the one case, the patient has had the use of a sound tooth, and in the other he has had equally as good use from a filled tooth. To my mind, the earlier decay in the one shows a greater susceptibility and indicates the necessity for greater care in the management of the case. As I said a moment ago, within limits, the usefulness of a tooth is not impaired by filling; on the contrary, its usefulness is more often than not very greatly increased by the improvement of the conditions. If this were not true, there would be little necessity for our services.

It is a very great pleasure for me to say that I agree fully with the essayist, that no more tooth substance should ever be cut away than is necessary to place that particular tooth in condition to resist further decay. That is just what Dr. Black has all along insisted on. It is just what I have contended for. It is just what all have taught. The dentist cuts farthest who cuts far enough. It is on this "far enough" that so many stumble and fall. Cutting far enough means that cavity margins must be extended into zones where the conditions of the first decay are so completely removed that decay will not take place again; provided, that the rest of the work is made just as thoroughly. We should ever bear in mind that it is necessary for us to do our work as surgeons do theirs. They do not care to do extensive cutting, but they cut and continue to cut, until the conditions are so altered that the disease is eradicated. Intelligent dentists and surgeons recognize fully what this means, and they also recognize that the results obtained justify the means. It is in studying the results obtained by others who do not follow such methods that we quickly learn to so alter our own methods that the conditions which come to us are corrected and the parts placed in a normal condition where such failures cannot take place again. It does not make any difference how perfect the work has been made, or how perfect the work is, if the conditions of recurrence have been left, failure is but a question of time. Intelligent men in our calling are beginning to recognize this and already we are beginning to hear about the nature of these conditions and how they can be done away with, and it will not be long before we shall hear much more about them and much less about the theories. I do not wish to deal with theories, nor does any intelligent man. We all wish to deal with the conditions themselves.

There is no difference in opinion between the essayist and any of us when he says that all fissures should be opened and followed out to their extreme ends. And I am very certain we are all in harmony with his ideas that all decay and infected tissue must be removed.

It is not possible, however, for me to accept the idea of lapping gold over the margins of those cavities which we fill in the occlusal surfaces of teeth. Fillings made in the occlusal surfaces should have the gold trimmed to the cavo-enamel margin just as is done with all fillings made in other surfaces of the teeth. I shall be obliged if the essayist will tell us what advantage he has found from following such a method.

Regarding the ideas presented that it is "continuance of decay" and not "recurrence of decay" that takes place where fissures are not followed out, but a filling made in the central pit only, I feel that it would be well, right on the start, to acknowledge that the conditions of the original decay were not removed when the cavity was prepared and filled. Decay went on just the same as if the tooth had not been filled. Unless the operator has a just comprehension of the cause of decay, and the conditions of its activity, he is laboring under great disadvantage in doing his daily work. If these are not known, temporary work is, as a rule, the result.

In answering the essayist's Brooklyn paper, I said: "Full 80 per cent. of the work I make is the removal of and the replacing of poorly made fillings which have failed on account of non-extension for prevention." After another consultation with my assistant and a careful consideration of this matter, I am of the opinion that the statement is correct, and I have no reason to change it. It was only after a most careful examination of the record of removed fillings that I said: "Eighty out of every 100 fillings which I remove are removed on account of cavities of decay at the gingival margin due wholly to non-extension for prevention." I mean just what is said, that there are cavities of decay at the gingival margin, or at the bucco- (or labio-) gingival and linguo-gingival angles. It does not make any difference to me, how, when, where or by whom the teeth were originally filled, the fact nevertheless remains the same—there are cavities of decay or the fillings are let alone. The essayist states that some of the fillings would be able, if let alone, to preserve the teeth for years, if not for life. As far as that statement is concerned, I have asked one of my patients to answer him. This woman is the daughter of a well-known banker, and very recently consulted me regarding the condition of an upper right cuspid, which was the source of a great deal of annoyance to her. She said that she had been in the hands of five different dentists, and an examination reveals that she has twenty-seven fillings in the proximal surfaces of her teeth, and I find that not one of the interproximal spaces is contoured properly. Yet the last dentist she consulted is a man universally recognized as possessing unusual ability. He evidently filled her teeth without studying the conditions with which he was dealing, and now not quite two years have elapsed, and here are a number of cavities of decay at the gingival angles. This woman desired to know what the trouble was with her upper right cuspid. It contained a gold filling in the distal surface that was 5 mm. linguo-labially by 6.2 mm. gingivo-incisally. I looked it over and found at the labio-gingival angle a cavity of decay which measured 2.1 mm. linguo-labially by 2.3 mm. gingivo-incisally, with a depth of 1.5 mm. This patient was suffering from excessive sensitiveness of the exposed dentin, such as sometimes occurs in rapidly progressive caries. Now, this tooth had not been filled quite two years. The woman's age is in the neighborhood, I should say, of 35 years. I recognize in this a case of unusual susceptibility at this time of life, and requiring unusual extension to meet the conditions.

She came per appointment on Monday, April 29th, and I said to her: "Before I go to work for you this morning, I should like to ask a few questions. You can materially assist me by answering them, and I shall be most grateful to you for so doing:"

Question: "Has the condition of this tooth been pointed out to you?"

Answer: "Yes, it has."

Question: "Why do you wish this filling removed?"

Answer: "Because cold air hurts me and everything that gets in there annoys me excessively. I wish it removed on account of the pain and annoyance I have had with it for the past year."

Question: "Why did you not call the attention of your former dentist to this condition?"

Answer: "I did so, but he said that that was nothing. I said to you when I first came that I wished this tooth (pointing to the upper right cuspid) filled first, as it was the source of constant annoyance to me."

Question: "Could you continually endure the pain from this open cavity?"

Answer: "No, I could not."

Question: "Do you wish this tooth placed in a better condition, or do you wish it left as it is?"

Answer: "I certainly do not wish it left as it is. I specially request and I ask now that you fill that tooth in advance of doing any other work, on account of its annoyance."

I think this lady has answered the essayist much better than could I, and I have no desire to comment further on his statement. I beg leave, however, to state that my "ardor" never leads me to do for others otherwise than I would wish them to do for me if the circumstances were reversed.

The G. V. Black Dental Club held its annual clinic in February of this year. Within three days some 140 persons consulted me regarding the condition of their teeth with a view to being clinical subjects. In the teeth of almost all were fillings in the proximal surfaces, and it was the rule to find cavities of decay in the gingival margin or at the gingival angles beside the fillings. I will venture to assert that I saw no less than 500 fillings in the teeth of these subjects and at least 350 had recurrent decay. And right at this juncture of my dictation a gentleman consulted me who was a patient of one of the leading professors of operative dentistry of this land. He said, "This tooth bothers me." I looked at it. A filling in the disto-occlusal surface of an upper right second molar. About one-third of the distal surface was taken up with filling material; the other two-thirds by a cavity of decay. Further, if we consult the literature of the past we find continual complaint of the recurrence of decay at the gingival margins of proximal fillings. I do not know of any other proof, the essayist may wish, as to the correctness of this recurrence of decay. If he will come into my office for a week, or if he will but go down into one of the dental infirmaries in this city and spend a few days, he can very quickly be convinced that it is law and gospel which I have preached to him.

Prior to 1891 I had cavities of decay in the gingival margins of fillings made in the proximal surfaces of teeth for the reason that I stumbled along in the dark and filled teeth without recognizing the conditions which brought about the disease. Every once in a while a patient will return to me with cavities of decay in the gingival angles. When I look up my record I find many of these operations were made prior to 1891. I expect that in the future I will occasionally find recurrence of decay in these positions in cases in which I have not sufficiently recognized and met the conditions when doing the operations.

With Dr. Black present, it is but right that he discuss extension for prevention. It is for the master to state his position and not for his pupil.

It is the experience of all observing men that where a healthy gum septum covers the gingival margin of our fillings and crowns that the teeth are not as prone to decay as where a gum septum does not cover them. I could keep you gentlemen here five hours, talking on this subject and citing example after example, but to what purpose—to what end?

I am free to confess that I do not understand what the essayist means when he speaks of "manipulation." If he includes in that, changing the conditions which lead to the first decay, placing the cavity margins in territories kept clean by the simplest means on the part of the patient, making all cavity margins accessible, contouring properly the interproximal space, building a proper contact-point on the filling, taking up the mesio-distal wear of the teeth, applying properly the five forms for the preparation of cavities, properly condensing and finishing all fillings, etc., then, to once again quote my friend Dr. B. Holly Smith, "I am in harmony and accord" with his views. It is by doing these things that the condition which led to the first decay is removed and the tooth placed in the best state possible to withstand the ravages of disease.

The question of immunity and susceptibility, with their changes occurring during the progress of our patients from childhood to maturity, and also during mature life and advanced age, which so materially affect our operations, and the consideration of which should be so constantly with us at the chair, I will leave to be discussed by those who have made a much greater study of the subject than anybody else, Drs. Black and Johnson, and to others.

Dr. G. V. Black: Mr. President—I have not prepared a discussion on this paper. I read the paper and the discussion at the Brooklyn meeting hastily, and I shall depend upon what comes to me for what I say.

The plans adopted by the operator in filling teeth will reflect his ideas of the causes and conditions of decay, or else he will fill teeth simply as a mechanic. One of the two will occur. Therefore, if we are to fill teeth with the view to cure and prevention, the study of caries must be made, and as we differ in our ideas of the causes of caries, and in our estimate of conditions, so will we differ in our plans for the eradication of caries and the prevention of its recurrence. Our present ideas of caries of the teeth have been a matter of growth. If we go back one century we find certain able men handling this subject, and among them were Fox, and shortly after him Bell. These were among the more prominent men who wrote in English. They were educated men. They were elegant writers whom we love to read, even to-day. They were men who gave a good deal of attention to the subject of caries of the teeth. They were practitioners of dentistry and making the study of this subject the business of their lives, and in their time were the leaders of thought. Their ideas were different from ours to-day. They held that caries was the result of an inflammatory process, and that caries began within the teeth and worked its way to the surface. That idea seems ridiculous to us, and yet it was held by these men and their cotemporaries in France and Germany. The best men in the world held to that theory, and yet we may say now that they were short-sighted in their observations. Soon after, or about 1830, this theory was attacked, first by Robertson in England, then by Regnard in France, who first gave expression to a purely chemical theory. This was met again by Discerebode and others, and the contentions were hot between the men of those days —between the inflammatory theory and the chemical theory—and we on this side of the ocean took part in it. Kœker, Harris and other men of their time took part in these discussions, and the result was what was termed the chemico-vital theory, as was held later by Tomes. After Tomes began to do his work, he developed the histology of the teeth, and gave us a knowledge of their structure which we had not had before; and it was found that an inflammation, as we understand it in other tissues, could not occur in the teeth, and this fact changed the ideas of men. Then this chemico-vital theory held sway for a time, developing and changing with the years, and had its influence in directing the course pursued in the treatment of caries, terminating in the purely chemical theory, in the latter part of the work of Magitot. In this the idea of the vitality of the teeth as influencing this carious process was abandoned by the best men in the world.

Preceding this somewhat came the suggestion that microörganisms had a causative relation to caries. Lieber and Rottenstein first dealt with this subject in a book published in German in 1867, and in English in 1868. They entered the field of discussion, changing somewhat the ideas of men and the methods of treatment, but at first not seriously. But it was followed up, and in 1881 we had the wonderful work of Miles and Underwood, showing conclusively the presence of microörganisms in the dentinal tubules and explaining that which Tomes had seen but could not explain—a granular substance in the dentinal tubules. This culminated in the brilliant work of Miller in 1883-4, demonstrating the causative influence of microörganisms in caries.

In the progress of this work men were changing their views more and more and making more thorough the work of filling teeth, adapting the means to the ends with the light coming to them. Then the matter seemed to rest for a time. It was necessary for these ideas, for these facts, to be assimilated by the profession—particularly the assimilation of facts that had been given to the profession by Miller seems now to have been slow. We must try it anew. We must go over the whole subject anew. We must develop it anew, time and again, and in this way convince men of its truth. As this went on it was found that Miller's work did not explain all. The causative relation of microörganisms to decay was clearly shown to exist, but these same microörganisms were found continually in mouths immune to decay. There was something else. At that time the teeth of one person were supposed to be weak and would easily break down; the teeth of another were supposed to be strong and did not break down readily, causing apparent variations in the action of the specific causative influence, and many men were at sea as to caries of the teeth. In my papers of 1895 I think I convinced many men that the difference in the occurrence of caries in different persons was not on account of differences in teeth. Differences in the teeth do not explain the differences that we find in caries of the teeth in different persons; neither do they explain the differences in caries of the teeth at different times of life. Gradually men became influenced by this thought in the matter of the treatment of caries of the teeth. We find expressions in the literature used in this way and in that way, by some not accepting the later developments, but guarding their expressions so as to be a little nearer in harmony, and we are thankful for that. Then came Williams, who demonstrated the microbic plaques which I spoke of a number of years ago, but could not demonstrate satisfactorily. He gave us another thought, and we come back to the old statement made by Robertson, or the still older statement that seems to have been made by Mesue, in 1400, when he says in his quaint old German, although I will repeat it in English, that by gathering of food at certain points, and its decomposition a "sharp moisture" (an acid) is produced that eats away the teeth—purely a chemical theory. Miller explained that decomposition and its relation to caries. Practically that is all he did, but that was enough for one man in a lifetime. Now, we will restate the proposition as advanced by Robertson that the acid which produces destruction of the teeth is produced by decomposition at the very spot where the decay occurs. We are now ready to state and apply this principle as confining the beginnings of caries to certain areas of the surfaces of the teeth that are not habitually kept clean. Now, going a step further, we come to the study of immunity and susceptibility, comparatively a new proposition in dentistry. In the study of immunity and susceptibility of teeth to caries and the causes which surround and control these, we are reaching the limit of our present knowledge. We have gone step by step, building up our knowledge of this process of decay to this point, but in the study of immunity and susceptibility and the causes which bring them about there is yet much uncertainty. We do not know the facts lying next beyond, nor how this may modify our application of the facts obtained. Will it stop here? No. As the years go by we will reach further out into this field. Indeed, we are beginning the process of actual knowledge on this point in the work of Micheals, in which he brings out by laboratory experiments the differences in the salivary fluids which bring decay in one case and bring immunity in the other. It will require time to assimilate this thought, and it will require time to apply it in our general practice. But the time is coming when we as dentists must begin this study in earnest. The younger men, who have more time before them to spend at it, must begin in earnest the study of serum pathology in dentistry. But for the present we must labor with the light we have—not that we have attained full knowledge of these subjects, not by any means; but with the light we now have we must study the subject and apply our means to ends. In this way we should study for the present very carefully the regions of the teeth that are liable to decay, and when we look over the human teeth with this thought prominently in our minds we find that the beginning of caries—mind you, I say beginning of caries—for it begins at certain isolated points upon the teeth, either in open fissures or deep grooves, or pits, or upon the axial surfaces of the teeth in such positions as are not kept well cleaned.

There has been some quibbling in the Brooklyn discussion over the term "self-cleaning areas of the teeth." Every dentist should know by this time what that means. It simply means those areas of the teeth that are kept clean by the normal motions of the mouth, by the motions in chewing food, by the excursion of food over the surfaces of the teeth, etc.—nothing more, nothing less. This is a simple proposition, and we will find as we study it that we have practically no caries beginning upon any such surfaces. These, with the portions covered by healthy gum tissue, are the immune areas of the teeth.

What is extension for prevention? Simply the extension of a cavity margin toward or into the areas that are self-cleaning. How often, comparatively, do we find caries beginning upon the angles of the teeth? I mean those angles that divide the different axial surfaces from each other, as the buccal from the proximal, and which extend from the occlusal to the gingival. I do not say that it never occurs; but comparatively how often do we see it beginning upon the angles of a molar or bicuspid, or the angles of any tooth? We find it beginning upon the proximal surfaces, and upon the buccal surfaces of teeth. We do not find it beginning upon the angles of the teeth because in mastication the food in passing through the embrasures is forced between the angles of the teeth to the gum line. That is a simple proposition that any of you may prove by your remembrance of what you have seen. Then, where are the areas of liability upon the buccal surfaces, exclusive of the buccal pit? Near the gum line in the gingival third of the crown. Over that bulge of the tooth, or where the tooth bellies out to form the curvature of the buccal surface, the excursions of food clean it; but near the gum the food slides over and does not clean it well. The greatest liability to decay is central to this gingival area, but extends mesially and distally toward the angles of the tooth. On the proximate surfaces of the teeth the food is divided by the contact point and spreads either way, to the buccal and lingual, over the angles of the teeth, and if we will examine our cavities of decay in their inception or early beginning we will find a central spot of penetration of decay to the gingival of, but near the contact point, and whitened lines extending near the gum line toward the angles of the tooth. These represent the area of liability. We cut these out in the preparation of cavities. That is extension for prevention. That is all it means. In cases in which there is great susceptibility to decay, you will find these lines long and you will need to cut far. In cases of comparative immunity it is not necessary to cut so far.

A word or two in regard to the position of decay and the idea that a cavity occurring in that position is free from the margin of the gum. What is the normal condition? I ask this question seriously. Does not the interproximate gum tissue normally fill the interproximate space to the contact point? Certainly it does, and it is only when that is pressed down more or less by food pressing through the contact point and lodging there that we get caries at that point. The more it is pressed down, and the more the gum tissue is absorbed away, the broader the area of liability to decay. It is increased in size by the pressing away of the gum tissue. Now, gentlemen, I submit that we do nearly all of our filling in the teeth of patients who are less than twenty-five years old and before there is much loss of gum tissue, and if we do it at that time, and the cavities are only very reasonably cut, how are you going to fill them and leave a space of tooth tissue upon the proximate surface between that filling and the gum margin? I do not know how it is down in New York, but it seems that the people there must have gums different from the people "out West." I assure you that in the West we do not have that condition. We do not have that condition in people for whom we do most of our work. In persons as old as myself, and particularly those who have had the misfortune to have more or less trouble from gingival pericementitis, we will have gums that are short, and it will often open up very nearly the whole interproximate space. I have never argued for cutting all of the approximal surfaces out in such a case unless they lie in close contact and there is an appearance of susceptibility to decay. But generally the susceptibility to decay is gone before this occurs, for most of these persons are old enough to have become immune. You talk about little bits of proximate fillings that have protected teeth for fifty years. I have a cavity in my second molar that was open when I was eighteen years old. It has no filling in it, and has not had, and it is no bigger to-day than it was forty years ago. Those little fillings protect, so to speak, where there is no need of protection—when immunity has come and there is no longer need of protection.

I remember very distinctly of digging for skulls in the mounds near St. Louis a number of years ago. I opened a grave in which there were five very old skeletons. All of them seemed to have died by violence. Among them there was a young woman. The third molars had not yet come through, and with the exception of these the crowns of all the teeth had been destroyed by caries. Lying by her side there was a man who was older. His teeth were much worn. There were small cavities in the proximal surfaces in nearly every one of the bicuspids and molars; the cavities had broken more or less to the occlusal in the wearing of the teeth and some had worn out. In looking over these I said, here is a case in which decay does not seem to have harmed the usefulness of the teeth. Here is another case where the teeth are destroyed by caries. To one immunity had come with advancing age. To the other the susceptibility had been so great that the teeth had been destroyed in youth. We must recognize these differences. We must recognize immunity. We must recognize returning susceptibility in the case Dr. Wedelstaedt has related this evening. We must recognize the fact that although immunity may have come, susceptibility may come again, and we must guard our patients against that risk. Hence, I say, until we can know well enough of immunity and susceptibility to be able to know that our patient is immune and will remain so, we must guard against the recurrence of susceptibility in cases that are coming to us. We do not yet know how to manage caries otherwise than by so filling the teeth as to guard against its recurrence. When we do know, then it will be time to say that we shall not have to so fill teeth to guard against it. We must prepare for the emergency. Hence I would suggest great care as to the cavities we fill, by cutting well toward the areas of immunity. That is all. And when I say cut well toward the areas of immunity, it does not mean necessarily and specially toward the gingival margins so much as it does toward the bucco-gingival and linguo-gingival in molars and bicuspids, squaring out that particular portion of the cavity. It is not so generally necessary that we cut the central part of the cavity farther to the gingival. Often it is unnecessary to do that, but generally we should square out those angles to the gum line and make our cavity of box form. It is the simplest kind of cavity to fill, and it is a form of cavity that the exigencies of the case seem to require. When we do that we remove these areas of liability.

So far as the statements of the essayist are concerned, it does seem to me that his argument is sound, that this particular region is not the region of liability when covered by the gum tissue. But permit me to inject another word which I have always used when I have written upon that subject. You will find that I have said "covered by a healthy gum margin." I always put in that word "healthy."

I wish to say a few words now in regard to contact points. Some of the dentists down East use the word "knuckle." It is hard to know what they mean by that term. It has been used for twenty-odd years. No man has ever explained precisely what was meant by the word knuckle in the sense in which it is used. I considered the word carefully when I wrote my papers of 1891, and I came to the conclusion that it was not a good word, and that I would not use it. I used the words "contact point" and described that instead. Not enough attention has been given to this matter. With all that Drs. Johnson, Wedelstaedt and many others have done for the profession at large, it does not seem to me that dentists comprehend the full meaning of this term. Guard the contact properly, and you will not often have recurrence of decay in the central portion of the gingival margin. Of course you will get it occasionally, and not so infrequently either in persons otherwise immune to decay. They have not had caries of the teeth and the contacts have worn until they are flat and have begun to hold food between them. We have not studied this subject sufficiently. If you want to know more about the wearing contact points, come to the museum of the Northwestern University Dental School and I can show you any number of these cases where the contact has been flattened until it holds food, which crowds down more and more until a cavity has been formed at the gingival line, instead of in the ordinary position of cavities near the contact point. In that class of cases you will have cavities at the gingival line centrally. Those are in the older people. I do not care how far you cut; you may put on a crown, you may run the bands well up, and still in cases of very flat contacts there will be decay in that position. It will begin centrally. But where you simply extend enough to remove present decay, making good contacts, it will begin at the linguo-gingival and bucco-gingival angles, and not centrally. The central portion is often the immune area under these conditions. It is this class of cases in which we have not taken proper care of the contact points, in which we get this central decay, beginning perhaps at the gingival line and working rootwise and crownwise, perhaps leaving sound tissue between the filling and new cavity. These cases which begin to decay again on account of failure of proper extension decay along the margin of the filling, not away off, but along the margin of the filling is where they begin to decay, because that is the most susceptible portion of the tooth.

I think I have gone over the subject sufficiently. Although there are some things that I feel like going into, I will not do so, but leave the discussion to Dr. Johnson and others who are to follow. I have spoken long enough.

DR. C. N. JOHNSON: So far as I am concerned I do not feel like discussing this subject at all. At the outset I am tired of it. I have before this said all I ought to say on this subject, and I thought and do think that the arguments for and against the practice of extension in this particular region have been sufficiently gone over.

In the paper Dr. Ottolengui read at Brooklyn, I found very many things in it with which I could cordially agree; in fact, I found very few things in that paper to disagree with. But with his paper to-night I find almost nothing that I can agree with. However, much of what I had expected to say has already been said better than I could say it, though there are a few points I want to touch upon.

The essayist has said, if I understood him correctly, that he has not found recurrence of decay at the gingival margins of his fillings that have been put in in the last twenty-five years. I should like to ask him if he has never found what he calls a continuance of decay at the gingivo-buccal or gingivo-lingual angles of these fillings? If he has not, then I am willing to take off my hat to him, and I wish to say that Providence has been kinder to him than to any other practitioner that I ever knew.

This whole question is simply one of observation. Dr. Ottolengui says it has been his observation that fillings do not fail at the gingival margin when the margin has not been extended so as to carry the margin of the filling under the gum; but that fillings have failed frequently where the margin has been extended under the gum. My observation and the observation of others with whom

I have talked on the subject have been just the contrary—that in the majority of cases, where the gingival margin has not been so extended, so as to carry the margin of the filling under the free margin of the gum, we do find a continuance of decay. It is the exception to find decay when the margin has been carried under the free margin of a healthy gum. Dr. Black brought out very clearly and forcibly one point I made prominent in my Brooklyn paper, which was this, that when the gingival margin of the cavity or filling does not extend under the free margin of the gum, the filling so placed must be an exceedingly shallow filling occluso-gingivally, because, as Dr. Black has said, when the gum tissue is in a normal condition in the interproximal space, it comes up in an arched form reaching to the contact point. When we have decay beginning in the region of the contact point, the cavity cannot extend any appreciable distance without passing under the gum, provided the gum is normal in form, and when the gingival margin of a filling extends under the free margin of the gum, and the filling is properly inserted and the gum tissue in a healthy condition, I consider the margin free from recurrence of decay, but I do not consider that margin free from recurrence of decay in ordinary cases unless it is so extended. That is my observation. Dr. Ottolengui says that it is a matter of manipulation, and not of environment. Is it? Let us see. Where do we more often than any other find recurrence of decay around our fillings upon the proximal surfaces of incisors? Do we not find it at the gingivo-lingual angles of these cavities? Has it not been your experience that we find recurrence of decay oftener in that place than in any other position? It has been mine. Is that the point where we are likely to fail in our manipulation? Is not that the point of the whole cavity that we have under better observation than any other? We are looking at this angle all the time we are operating; we have the best access to the angle. We can form it as perfectly as we wish, and the relation of the force of the plugger in condensing gold against the angle is absolutely perfect. If we make a perfect margin at all, we make it at the gingivo-lingual angle. Still it is at that angle where we more frequently than any other find recurrence of decay. Is it, then, a matter of manipulation instead of environment? It seems to me a matter of environment.

But I am impressed with one thing, that it matters very little after all what may be the personal opinion of any one man in regard to this question. It matters very little what my opinion may be, or what Dr. Ottolengui's opinion may be. But I tell you, gentlemen, what is a matter of serious import, and that is that you and I and all of the profession generally are set to thinking upon this problem. It is not a problem that can be settled by debate either here or in Brooklyn or any other place. It is a matter that must be settled in each individual case with the patient in the chair, the patient day after day, and all I ask of this or any other audience is that they observe their patients carefully as they come to them from day to day, and study this question from the point of view of the tooth as it presents itself to them in practice. See where you have your failures and where others have failures, and base your future practice on observations made in the mouth, and I shall feel safe as to what that future practice may be.

Dr. J. N. Crouse: I wish to contradict one claim which was made, namely, that skillful operators thirty years ago practiced the same method as now advocated in extension for prevention. At that time heavy gold, No. 60 and No. 120, was used, and cavities were opened up wider because it was impossible to pack that sort of gold except with mallet pressure, and to get at the cavities more extensive cutting was necessary. This, however, was not done for the purpose of making the surfaces immune to decay, for extension for prevention was not urged at that time, nor was the method of preparing cavities the same. Many of us were using heavy gold, and we always started fillings from retaining pits on the two lateral corners of approximal cavities. Although some excellent fillings were made at that period, there was no general system of shaping cavities, and the difficulty in using heavy gold lay in the immense amount of time necessary to insert such fillings.

This plan of preparing cavities saves time, and I therefore believe Dr. Black's work along this line is as useful as any he has ever done, as it makes possible not only faster but better work. The question of extension for prevention requires good judgment to decide, and it should by no means be adopted universally—that is, extending cavities to the free margin of gum. This applies only where the gums are in their natural positions and where there has been no great recession. In many cases, however, it is good practice to extend the cavity to the margin, when by so doing the surface will be more readily kept clean.

Dr. Edmund Noyes: I am not quite pleased and satisfied with the fact that nobody has got up and squarely supported the essayist, for I am convinced there are many men present who support him in their practice. There are perhaps two things that seem to me worth while to touch upon, although they have been in part at least dwelt upon already. One is in relation to the immunity or otherwise of tooth areas covered by gum tissue. There seems, on the face of the statements made, a positive disagreement and opposition between Dr. Ottolengui's statement in his paper and that of the other gentlemen who have spoken, and to my mind the disagreement is entirely covered by the one word which Dr. Black used, and which needs even greater emphasis than he put upon it—*healthy* gum tissue. Of course we must expect to find decay under unhealthy gums, and we do find it. But I am inclined to think that it is perfectly safe to challenge the discovery of initial decay under healthy gum tissue lying in close contact with the tooth. The experience of making a small proximal filling, and finding within one or two or five years new decay at the gingivo-lingual or gingivo-buccal corners, taken together with the fact that when we have separated the teeth for filling, if we find them particularly susceptible to decay, we can almost always discover little white lines of beginning disintegration running toward those very angles, furnish sufficient reasons for the practice of extension for prevention. It is impossible for a man observing his own work in that condition after one or two years not to wish that he had made the filling cover those portions of tissue which he finds decayed in so short a time, and it is unquestionably my own experience that since the habit of extending cavities in this wise, not necessarily very much gingivally or toward the alveolus, but always toward the bucco-lingual surfaces, especially the portion of the cavity nearest the alveolus, and making a flat instead of a round seat for the filling, the instances of recurrence of decay have been much diminished in my own work. The essayist said incidentally that cavities were never found between old fillings and the alveolus whose margins did not reach the filling. I hardly believe that he meant that for an absolute statement, for I have seen such, in which a cavity formed nearer the alveolus than the filling already in the proximal surface of the tooth, and with sound tissue between the cavity and the old filling.

Dr. Ottolengui: I was speaking of the anterior teeth only.

Dr. Noyes: I did not understand it was limited to the anterior teeth at all. It seems to me desirable that we should keep as near together in this discussion as we can, and there are numerous exceptions and many limitations to any absolute rule of extension of cavities for prevention. The dentist does not want to imbibe this idea and go to work and cut every cavity he sees as near to the alveolus as he can get, and as near the lingual and buccal surfaces as he can get. There is room for sound judgment in the execution of any such theory, and we sometimes fill teeth for persons who are immune and are likely to remain so, and in those instances there is no need of any extension for prevention, for there is nothing to prevent. It would be desirable and important to catalogue the limitations and the exceptions to these ideas and rules, but I cannot do so at this time, and I have not given the matter sufficient attention to do so in full.

DR. THOS. L. GILMER: From conversations in the past I am quite certain that there are a number of gentlemen present who are quite in accord with Dr. Ottolengui. I feel that these gentlemen should be heard from, rather than so many of us who think differently.

Nearly thirty years ago I was located in the immediate vicinity of Jacksonville, Ill., at that time Dr. Black's home. So long ago as this Dr. Black was practicing what he now preaches. That's extension for prevention. His work was about all that I came across that did not fail at the vulnerable point.

My experience teaches me that it would have been better for my patients had I commenced the practice of extension for prevention long before I did, as since adopting it I have had very many fewer failures than formerly.

Dr. Ottolengui offered as an objection to extension for prevention that it required more skill for its performance than is possessed by the average dentist. I am decidedly of the opinion that it is an easier method of operating, that we may often make a difficult operation simple by the method of Dr. Black and by this means do a more perfect and lasting operation.

DR. OTTOLENGUI (closing the discussion): I promised in the course of my paper that if it should be proven that Dr. Black's method is right, I would go home and preach and practice it. That is what I am going to do. But I find that Dr. Black does not mean what I understood him to mean by his paper of 1891.

I learn to-night that where there is considerable tissue between the margin of the cavity and gingiva, he does not cut it away.

Neither do I. Also that in patients where the interproximal space is entirely filled by gum septum, and he cannot prepare the cavity without going below the gum, that he cuts under the gum. That is what I do. So we do not seem to be quite so far apart after all.

I will touch on a few points that have been made by one or two speakers, more especially by Dr. Johnson. I stated in the paper that I have not seen recurrence of decay at the gingival margin. Then Dr. Johnson asked me whether I had not seen continuance of decay at the gingival margin—that is, in cases where I did not cut out the infected territory at the labio-gingival and the linguo-gingival angles, and filled the teeth without making extension, if I had not seen continuance of decay? I shall not argue that I would not. If I left infected dentine there or anywhere else, most assuredly decay would take place. In other words, if we do not go beyond the infected territory, we will have continuance of decay. Where I have cut out those areas and filled them, even without going under the gum margin, I have not had recurrence of decay.

Dr. Johnson: I did not make use of the term "infected territory." What I want to ask you is this: In those cases where you have prepared cavities that are narrow bucco-lingually, and in which you have been able to reach sound territory, have you never seen recurrence of decay, particularly at the bucco-lingual and bucco-gingival angles?

Dr. Ottolengui: I do not remember ever having made such narrow cavities. I have not argued against lateral extension. I am talking about gingival extension. I have always cut away a good deal more than many gentlemen in this audience may imagine. I simply say, that the mere fact of extending a cavity under the gum does not necessarily bring you any certain salvation. I am placed in a peculiar position in relation to Drs. Johnson and Black. They are combating my position, while I am not disputing theirs. I have admitted that a properly made filling extending under the gum will be safe. But it is not necessary to so extend it, because a properly made filling in a cavity which does not reach the gum will also be safe. That brings up the question raised by Drs. Wedelstaedt and Johnson as to what I mean by manipulation, although that phase of the subject has been partly covered by Dr. Nyman. Dr. Nyman mentioned several reasons for failures of fillings and for recurrence of decay, and nearly every one of them was manipulative in its character. He did not include one environmental reason in his list. He told us about fracture of the margins, improper packing of fillings, etc. It is not at all improbable that my preparation of the gingival margins of cavities is a little different from that of the gentlemen who have seen so many failures in the West.

DR. NYMAN: In giving the reasons for recurrence of decay, I thought I dwelt on environment when I spoke of failure to extend the margins of the cavity to immune areas.

DR. OTTOLENGUI: That is part of a manipulative failure. The cases cited in my paper were not introduced as a basis of practice, but they were introduced to show that where the bands were properly placed under the gum recurrence of decay was a possibility. I tried to prove that that is not absolutely an immune area. That is all. My theory is that decay begins at the vulnerable point, and a filling properly put in will stop decay anywhere on that surface. What constitutes the proper preparation of that cavity? Extending the cavity until we can put a proper filling in it. A cavity must be extended until all walls are so strong that they will remain in perfect physical condition after resisting the force necessary for properly packing gold. There is a recurrence of decay in many instances because cavity extension has not been carried far enough. At the gingival margin it is necessary that the margin shall be square and flat, so that you can condense the gold solidly. If you have extended the angle sufficiently in both directions, but especially in a lingual direction, it is unnecessary to extend under or toward the gum.

There are one or two minor points I should like to touch on. Dr. Wedelstaedt took several minutes to explain to us that teeth were good after they were filled. I do not deny that. I admitted in my paper that teeth are useful after they are filled, but certainly no more useful than they would have been had they never decayed.

Dr. Wedelstaedt raised a question with reference to the occlusal surfaces. It is difficult to make myself clear on that point of extending a filling over the margins unless I have a blackboard. As we have no blackboard here, I will endeavor to do so. I spoke of cavities that were extended into the sulci. If there is any necessity of extending cavities into the sulci, it logically follows that the sulci are not already opened wide; that we are dealing with an initial cavity and decay at the ends of the sulci is not yet existent. The preparation of such a cavity, as I said in my paper, would be as wide as necessary and as narrow as possible, and unless the gold laps the edges there will be left grooves to hold debris and invite decay.

I want to say a few words more. I will read a paragraph from the paper which Dr. Wedelstaedt read in Brooklyn:

"I examined the gingival margins of one hundred proximal fillings which I found in the teeth of those who consulted me. In only five cases out of the hundred were the fillings flush with the margins. In ninety-five cases there were overhanging margins of filling material which in a number of cases amounted to over 3.5 millimeters in thickness. I began examining gold crowns, and out of one hundred crowns so examined found just one under which I could not send my exploring point. Some of these crowns were so large that the edges of the bands at the gingival margin extended full 3 millimeters from the tooth itself. I do not wish to be understood as saying that over-plus filling materials or bands are good things, but I do say that as long as these are not irritants, the only harm I know of their producing is to keep the mouth in an unhygienic condition, invite disease, and be a menace to the stability of the rest of the teeth. But in so far as ever finding any cavity of decay beyond such margins—well, this I have never seen."

If that condition of things can exist in the mouth under the gum septa, and the teeth remain healthy, all I have to say is that you must have different gums to deal with in Chicago from what we have in New York.

INSTITUTE OF DENTAL PEDAGOGICS. EIGHTH ANNUAL MEETING HELD AT NASHVILLE, TENNESSEE, DECEMBER, 1900.

(Continued from page 717.)

DISCUSSION ON PRESIDENT'S ADDRESS. See page 739.

Dr. H. B. Tileston, of Louisville, Ky.: In being selected to take part in the discussion of this excellent paper of the president, it seems to me that either my age has been overestimated, in grouping me with such patriarchs as Dr. Taft and Dr. Barrett and Dr. Weise, or I may accept it as a compliment to my experience and ability as a teacher, which, in that case, I know has been overestimated. Or, perhaps, we were all chosen because it might have been surmised by the Executive Committee that a president's address would not likely be of such a character as to call for very active and up-to-date discussion. If that were the case, then an unfortunate mistake has been made, for this address of Dr. Carlton's deals with the most live and vital question that could possibly come before this Institute of Dental Pedagogics—*the question of the teacher himself.*

It is a fact—deplorable indeed, but nevertheless a fact—that there are many men now engaged in teaching in our dental schools who are utterly unfitted to the task which they have undertaken. But it must be remembered that we have no normal school where teachers may be trained in the line of thought and action necessary to take positions as professors in our colleges. It is true we have this Institute of Dental Pedagogics, but it is not adequate to the demands as a teacher of teachers, to teach. We meet once a year, and we have a session of two or three days, but we cannot expect to make teachers in that length of time. Nevertheless, this institution is an excellent aid to instructors, in the fact that we get inspiration and new ideas, and if we go home and put them into effect, there is no question but what this organization is of great value. And yet it is not equal to the task of making teachers. For these reasons it has been necessary, in the newer schools, especially, and in fact in the older schools as well, to put men into positions as teachers who have not had the special training necessary to make them successful. Occasionally these selections have been wise, and men have developed rapidly into positions of prominence. They are the men who probably are "born teachers," as Dr. Carlton expresses it.

Now there are some men who are born great, others acquire greatness, and still others have greatness thrust upon them. With those who are born teachers there is no difficulty; they take hold of the work and succeed in impressing their ideas upon the minds of the students without any trouble at all. Then there are those who have acquired the art of teaching—and I do not know but what they make the most valuable teachers, because they have gone over the rough road, they have hoed the ground over themselves, and they know just what it is; it has impressed itself upon them, and if they only have the ability after having acquired that knowledge, of transmitting it to others, then they make very valuable instructors. Then we have that class upon which the position of teacher has been thrust—and I believe that represents the largest number in the professional schools to-day. They are men who may have been selected because they happened to have been associated with those who originated the idea of the college, or maybe personal friends of the faculty, or some who have assumed positions of prominence as writers, or they have been selected sometimes to chairs in the line of their daily office practice, or, according to the necessity which existed, to fill anything which happened to be left unfilled. Hence our teachers are not always best fitted for their positions, but it is a matter that cannot be helped. The best teacher of teachers is experience, and it will take many years to equip all of our schools with men of the caliber and grade that we desire to have.

Those upon whom this distinction has been thrust are the ones the essayist refers to as "teachers by accident"—a great many of us, I think, are "teachers by accident."

The object of a lecture, Thomas Huxley says, is: First, to awaken the attention, and arouse the enthusiasm of the student, and this can probably best be done by the personal influence of the lecturer, who understands what he is talking about, and for that reason commands the respect of the student; and in the second place, the lecture serves to direct or guide the attention of the student to the salient points of the subject, and at the same time compelling him to consider the whole subject, without allowing him to follow what personal taste he might have to take up some certain line of thought because it suits his fancy. But, after all, the lecture is but an accessory to that great instrument of scientific instruction, Demonstration.

The essayist has said if you want to educate a man put him to work; and if we attempt to teach a scientific subject by lectures alone, we will fail, because the limitation of language is such that we cannot possibly impress upon the mind of the student adequately, by means of words, a complicated operation like the preparation of a cavity and the filling of that cavity, from the platform. You cannot do it. In teaching so intricate a subject as dentistry there must be method regulated by system, and the system should be of such a character as to keep the lecturer and the demonstrator exactly in the same line; they should be in perfect harmony, and there is no better way, perhaps, of acquiring that, than to have a school among the demonstrators. That has been put into active use—has been the custom, I think, in the Northwestern School, under Dr. Black, and it has been put into use in our school to great advantage; meeting the demonstrators as a class, keeping them in strict accord with the lecturer, so that the demonstration will follow in perfect harmony; and there should be given nothing to the student in one department which is contradicated in another.

There is a difference between learning and knowledge. A student may take a text-book, and he can memorize that text-book if he has a retentive memory, from beginning to end, and he has learned it, and he may have such a retentive mind that he can listen to a lecture and almost repeat it afterward; he has learned it, and yet he has no knowledge of the subject.

The only way, in teaching scientific subjects, in my opinion, to give both the learning and the knowledge, is to demonstrate afterward what has been presented from the platform—either by the professor himself, if he has the time, or by the demonstrator, who, I suggested a moment ago, has been trained by the lecturer himself so as to be in perfect harmony with him and his teaching in the demonstration. A good plan is to divide the class into small sections of twelve or fifteen, and the professor can meet those sections in a room set aside for the purpose, and can demonstrate to them what he has been telling them from the platform. The difficulty is, that in large unwieldy classes, which are complained of by the essayist, and very properly complained of, it takes so long to get around to the whole class, and to demonstrate all the operations described from the platform as to make it practically impossible. It is possible only to take up the more important ones, those upon which the whole subject may hinge; demonstrate the principles, and arrange that other things will come up in the course of the demonstration by the other demonstrators, so as to complete the subject thoroughly and fully.

Now the essayist spoke, finally, of a point of vast importance, though he did not lay a great deal of stress upon it—that is, with reference to the moral fiber of the teacher. That struck me, when I read the paper, as a thought that would bear dwelling upon for a few moments. We, as teachers, come into contact with young men who are at an age, frequently, when their character is being moulded, and if we are of such standing as teachers, in their eyes at least, as to command their respect, they will not only want to do as we do in filling a tooth or treating an abscess or in making a crown, but they are very apt to follow our example as to our morality. And it seems to me that it is incumbent upon us as teachers who come in contact with young men at this moulding period of their lives to be examples worthy of emulation. I desire to commend that part of the president's address particularly.

Dr. L. S. Tenney, of Chicago: I am very glad to be given an opportunity of commending this brilliant effort of our president. It was certainly a most interesting paper, and one that bore every evidence of careful thought and careful study. We all realize, I am sure, that he has dealt with subjects of vital importance, and that upon our ability to secure teachers well equipped, well qualified and well endowed for their work will depend, very largely, our growth and advancement in the future. It was Oliver Wendell Holmes who said: "It is not so much where we stand as in what direction are we moving." The Institute of Dental Pedagogics has always taken an advanced stand in furthering the cause of dental education and dental teaching; that, in fact, is the object for which it was created, and there is no doubt that our work is on a vastly higher plane to-day because of the efforts of this body.

I was particularly impressed with the forceful manner in which the essayist drove home the point that he wished to make. Taking as his subject the qualification of the dental teacher, he has built up a most careful and convincing argument. He has endeavored to impress upon our minds the necessity for correct teaching and correct teaching methods. What is it that constitutes the ideal practitioner of to-day? Is it the man who goes to a college, learns just enough to get his diploma, and then goes out in the world and isolates himself from his fellow-practitioners, satisfied with his present attainments; or is it the man who regards his college education as merely a foundation upon which he must build. Certainly there can be but one answer to that question, and if we are to produce men who are of this type and are to become true professional, progressive men, then we must imbue them with the proper idea and the proper spirit while they are still within the college walls.

In speaking of the subject of the enthusiastic teacher, I recall the words of Dr. C. N. Johnson, who, in discussing this very subject, said: "In order to secure the best results in the class room the sparks must fly from teacher to student." And so it is; if we can put into our work the proper zeal and earnestness and enthusiasm we shall find that that same spirit will become contagious and will be reflected in our students. In that way, and that way only, can we get that intimate contact with mind to mind that is so essentially necessary in imparting knowledge in the class room.

When, again, the essayist said it is not so much what we teach him as what we enable him to think for himself, he touched upon a very important and a very broad subject. Some one has said that the object of all true education is to create a capacity for learning, by which is meant, no doubt, that it is not so much what we succeed in pounding into a student's head by hard labor and persevering effort as to what extent can we train and develop, and make his mind receptive; to what extent can we create in him the power of original thought and original work. Now whether this is a question to which we can devote ourselves is certainly open for discussion. It would appear not. It would appear that within the time that we now have at our disposal, it is all we can do to ground a student in the fundamental branches and to teach him the mechanical requirements of his work, without attempting the development of his intellectual faculties.

It seems to me, then, that the only solution of this particular problem is to demand a broader education before entering college. Now, gentlemen, I know this is a subject that cannot properly come before this body, because it is not in any sense a legislative body, but we can at least give our moral support, and we can let it go forth that the Institute of Dental Pedagogics stands for a higher education, and a more extended course of study, as the essayist himself has indicated.

Whenever I look at a great body of students, many of whom are men who have not for years engaged in intellectual work, I wonder how, in a short period of twenty-one months we succeed in teaching them half as much as we do. It seems to me that that alone is one of the most eloquent tributes to the correctness of our teaching methods. I think, however, that we have about reached the limit of our attainments, and while we may hope, or may expect to improve our work, in details, here and there, yet we can never expect to accomplish very much more, until we have more time to devote to our work.

Gentlemen, I think we have every reason to congratulate ourselves on the excellent paper that our president has presented to us.

Dr. A. E. Webster, of Toronto, Canada: It was only about fifteen or twenty minutes ago that I had this paper to read over, so I may not be able to say anything in a very connected manner, of course, but I have put down a few points, which have not been touched upon.

I think this society is to be congratulated on having such a paper read before it. I never read a paper in my life that I desired so long a time to study and carefully think about what it contains.

It contains the food for a great deal of thought and a great deal of work.

I might say just a few words in connection with the amount of knowledge that the teacher should have. The first thing that he ought to have is a knowledge of himself. He must have a thorough knowledge of the means by which he gains knowledge himself. Let him study that. For instance, let him take a thought and say, "how did I come to this conclusion," and think of the method in his own mind, how he obtained certain information. For instance, you see something and that suggests something else, or maybe you get a suggestion in your mind, and you do not know how it has come. It is very good study for yourself, just for a moment to think how that suggestion came into your mind at that time. That will give you a clue into the manner in which our students get their information.

Then we must know the student. And by knowing ourselves well we will shortly know the student; and when we learn the bent of his mind we know in what direction he is thinking, and by what means he attains knowledge.

The last speaker mentioned something about the training of the mental faculties, saying that it was about all we had time for, I think, was to give the mechanics of dentistry and to give a general information. I think that is probably not quite correct, in some respects. For instance, we can teach the subjects that we are intended to teach, according to the natural means of gaining knowledge, and thereby train the mind. For example, when we expect to teach anatomy, by giving two years' lectures in the subject, and then start the student to do dissecting; is that according to the bent of that man's mind? I say not. This subject was brought up last year, and not discussed. I want to bring it up again. Take, for example, physiology, according to the method we have ordinarily in our schools—I mean professional schools, it is directly opposite to the way it is taught in our public schools and high schools—but remember these men have been taught teaching for years. How do they start physiology? Do they start from the cell and build the whole subject up from that, and go on to the tissues and the frame and make the whole man, or do they start the other way? They take the whole man and run him down to the cell.

I want you to grasp the one point; that we see and learn generals first and particulars after. That is the ground principle upon which our educators are working to-day. Do we teach our physiology that way, our anatomy that way? Do we give demonstrations first and theory last, or theory first and demonstrations last. I just want to bring that out for discussion again.

You take, for example—and we can think probably more practically of some definite thing—in dental technic, we take a whole set of teeth first, and we study the whole set, and then an individual tooth; then we take an individual tooth, and then the surfaces of that tooth—one surface of that tooth, instead of the other way, beginning with one surface of the tooth and so on, back until the whole tooth is learned and later the whole set. I know a man who lectures on anatomy; in fact, the first thing he does, he starts up with a bone in the first lecture. Who knows where that bone came from, and worse he lectures on one surface of that bone. There is no connection between what the pupil knew before and what is being presented. I do not wish to follow that subject any further—only just to draw it out for thought.

Now the question of lectures, whether we should demonstrate or lecture, and so on, amounts to but little in my mind. I think a great deal depends upon the teacher. A man who can teach well by lectures I think probably would do better to follow that rather than go into a business that he is not fitted for.

To the man who quizzes well, it would probably be foolish for him to try to teach without that aid. As a lecturer has said, have every means possible to give instruction. Make a fine distinction between what is knowledge and what is mere information—that must be made by the teacher.

The essayist drew attention to one thing that is very important, and that is, not to stifle the individuality of the student. Let your student be a man from the time he comes in until he leaves, and just as much an individual, and not a class. How much simpler it is in the class room to have every man working, every man interested, every man putting in his say. Compare that with the method of the man who is highly respected and stands off and gives a cut-and-dried lecture. The student does not have anything to do with it and is consequently not interested.

In lecturing, another point that I wish to draw out is, to be guided by the circumstances at the time of lecturing. It will not do to prepare a lecture and follow it right up in detail. For instance, you find frequently that you come to a point where the student knows all that you are talking about, which would necessitate a change of plan—how shall we know? That seems to be difficult for some men, quite simple for others. How do we know whether the students are interested or not? The sparks must fly, as the last gentleman said, and you know, by that means. When you don't know, stop and quiz and find out. You can find out readily by the eye on you—and unless you get the eye on you, you might just as well sit down. I prefer, myself, to lecture this way, not to fill out the whole hour and twenty minutes or hour and a quarter. When I find that I have finished, or we are all through, giving close attention—we are doing this thing together, and the boys are through, to stop—there is something wrong. It is not something wrong in the student, either, it is something wrong in Number One when the students do not listen. Sometimes I lecture an hour and a quarter, sometimes ten minutes, and sometimes even less than that; and if you find the lecture does not *go*, you might just as well quit and stand out before your class and say, "Gentlemen, there is something wrong, we will quit and try this in the next lecture," and think about it, doing it in a different way next time. I have frequently said to the class, "This lecture is a failure, let me try it again." It is all right; the student doesn't mind it a bit. Try it. Next time you will do better.

I wish to congratulate the president for his excellent address.

Dr. W. C. Barrett, of New York: After making all the necessary preparations, at the last moment I find myself unable to attend the Nashville meeting, and in accordance with the request of the committee I write out and send that which I was invited to present in person. I am deeply impressed with the thoughtfulness of the address of the president, which I have been permitted to read. If all were imbued with the spirit exhibited in that paper it would be the better for dentistry. It is broad and catholic in its tone, and is redolent of a devotion to duty and a self-abnegation that is very refreshing in this mercantile age. I cannot hope to strengthen it by any words of my own. May I not be permitted to supplement it by adding another phase, and may I not be forgiven if I speak plainly and even bluntly, always remembering that it is honestly and sincerely and in the spirit of love for my profession and my professional brethren.

Last year this association appeared to have come to the parting of the ways, and a departure from the traditions of the past was made. The very name of the society was changed, and to some of us old fogies it was for the worse. The new cognomen may to those who are attracted by mere sound be more pretentious, but if a more priggish, presuming title was sought, the best of all those offered was not selected. A still better one might have been something like this—The World's Solidarity of the Pedantic Pedagogues of the Universe. That name would have given plenty of room for future growth, and certainly no fear of being considered ridiculous would have restrained us. This society was originally formed to foster the teaching of technics in our dental schools. That branch of our professional education had been sadly neglected, or had never been developed, and it was most distinctly a step in advance when it was sought to make more prominent in the curriculum of our colleges the training in manipulative skill upon which our practice so broadly rests. To perfect the coming dentist the education of his hand must accompany that of his head. His mechanical intelligence must keep pace with his mental growth. The brain which can conceive is useless without the fingers that can execute. So far as dental practice goes, the student might as well lack his head as to be without his hand. If I had a tooth to fill I think I should prefer the man who knew practical dentistry and nothing else, to him who knew everything except just how to do that particular thing.

Americans have always been a practical, ingenious people, who usually found the shortest route to the end sought. The fact of their segregation territorially from other nations, the necessity for subduing a wild country and out of the primeval forest and prairie to elaborate a civilization of our own, has made us in some respects different from the nations who have through many generations inherited their training and habits and methods from their ancestors. The very conditions under which our national character has been formed have proved an apt soil in which to grow that peculiar manual dexterity demanded in dental practice, and with the dawning profession there sprang up a class of men who soon became the most skillful operators of the world. But they lacked in the mental discipline which is obtained chiefly from an extended scholastic course. Dental professional schools were first established in America, and the building up of a proper curriculum of study was a matter of experiment, for there were no old traditions to serve as landmarks. What was chiefly lacking at the outset was a rigid system of school training in natural philosophy and abstract principles, and that the National Association of Dental Faculties is to-day gradually developing.

But hand in hand with this work must go the physical education and the manual and digital training by which alone can artistic dexterity be acquired. The expert pianist must begin this physical discipline at a very early age if he hopes ever to acquire any great proficiency. The music teacher commences to spread the hand and to give mobility to the fingers and independence of action and distinct individuality to the thumb as soon as the child can sit upon the stool. Even with the highest natural mechanical intelligence years of stern drill of the muscles are absolutely essential. It is not sufficient that the average American has good mechanical sense and aptitude in acquiring skill in handicrafture. That innate capacity must be properly directed, and that latent talent developed through systematic manual training. One of the most hopeless students who was ever my pupil in college was one who had graduated abroad in almost everything. From a German gymnasium he had gone to the university and completed the course of study there, graduating with his M. A. He had then taken the full university medical course, graduating again with his M. D. After this he had spent some years in post-graduate study, including lectures in dentistry. At twenty-seven years of age he came to America with one of the best-stored and trained minds conceivable, but with the most ignorant hand ever attached to a human arm. He could form no mechanical concept of a piece of work, and could he have done so he had no hand educated to perform it. It took two years to teach him how properly to grasp and manipulate an excavator.

There was, then, a few years ago, a great field for the exercise of the energies of the Technic Association. There was a distinct work for it to do—a branch of teaching otherwise neglected. During the very few years of its existence it has accomplished great things in systematizing the instruction of the hand. It has been steadily making progress, and it has bid fair to give to American educational methods a supremacy that would be undisputed in the very field in which our profession has won its greatest triumphs. But last year thoughtful men observed with pain a tendency to forsake the useful for that which was thought to be more ornamental—gradually to abandon a field in which those engaged in the work were acknowledged experts for one seemingly more pretentious, but of which they were in almost dense ignorance. It appeared like an outcropping of that spirit, born of a lack of knowledge of the fitness of things, which prompts the trustees of some young and beautiful and rapidly growing country town to change the pretty, appropriate names of its streets to such monstrosities as "National Avenue" or "Hawthorne Place," when not a resident would be able to recognize a hawthorn if he saw it; or to ape larger cities by calling them "Broadway" or "Pall Mall," forgetting that in so doing the width and character of the street does not expand with the name, and that the assumption of great city airs only makes the inhabitants ridiculous.

The definition of technic, or technique, is, The doctrine of the arts in general; the details of the mechanical performance in any art. What more expressive name for our society could have been chosen than that which so exactly describes its function? Pedagogics means pertaining to the science and art of teaching—the methods of the schoolmaster—the pedagogue; the latter term commonly being used disparagingly. What could be more absurd than for this association of professional men to assume the pedagogue, or to pretend to be expert in the methods of the schools? That is peculiarly the branch in which they are least skilled. We are *not* pedagogues. Teaching is with us only incidental. Our livelihood is obtained from the practice of our profession. There is not a man among us whose life is devoted to the calling of the pedagogue, nor one who gives his whole time to instruction, unless it is in a very subordinate position, and even such teachers necessarily teach technics and have nothing whatever to do with pedagogy as a science. It must have been ignorance of the real situation and of the significance of words that prompted the movement of last year, or it was the result of lack of thought and consideration. That certainly is how it appears to the old fogy.

I desire to enter my earnest protest against any such shifting of policy and such vain assumption as the change made last year seems to indicate. I hope that we may stick to the old paths of honor and return to the title under which this association won its triumphs in the past years, and that its scope will be confined to the field which it is so competent to cultivate, and that there will be no attempt made to invade the realms of pedagogy or to pose as members of a calling which certainly is no more honorable than that which is legitimately our own. Let our greatest pride be that we are dentists, and dental teachers if you will, and not schoolmasters.

DR. G. E. HUNT: The chair can hardly conceive of any set of remarks that would have been more conducive to the writing of a paper such as the president wrote than those that have just been read by our secretary. For the dean of an institution and a member of this association to say that teaching is merely incidental in his career, or that he does not see any necessity for us being trained teachers—which is practically what he does say—is in the nature of a surprise, surely, to this body. Up to this point, it seemed to me that the discussion of the question had been pretty completely concluded, but with this last communication on tap, I will announce that the discussion of the paper is still open, and we will be glad to hear from any or all of you.

DR. THOMAS E. WEEKS: Mr. President, there is one point touched upon in the paper which naturally appeals to us, and I would simply emphasize what was said about holding school for the demonstrators: that is, the necessity of all the teachers getting together and comparing methods; the younger men will naturally gain from those of more experience, and their energy will be transmitted to the older men, who, it was hinted, might become a little careless sometimes. We have found that the acting together of the whole body, including the teachers of the primary branches in medicine, has been of wonderful benefit to all of us. Then the different departments—that is, the chair of operative dentistry, for instance, gathers his teachers about him, and they discuss what is being taught, and how to teach it, in operative dentistry; the lack of normal schools in which teachers may be trained can in a measure be compensated for by this method of having frequent meetings of all the teachers, and between times meetings of the teachers interested in special subjects.

DR. J. H. KENNERLY, of St. Louis: There seems to be one point that particularly attracted my attention in the paper, that of personal contact with the student. Until the present term in my capacity as teacher of prosthetic dentistry, I have had the privilege of teaching prosthetic technic also. I have found that by personal contact with the student from the time of his entrance into the school, it is not very long until, as one gentleman remarked, the sparks began to fly. By personal contact with each and every man you can find out where he is principally lacking, where he failed to grasp what you particularly desired to teach him. The present term I do not teach prosthetic technique. There are a good many of you who know that I have changed from one school to another, where I unfortunately fell among a class of students, not one of whom I knew, and consequently my work as a teacher this term has been one of unusual hardship on account of the lack of that personal contact and acquaintance; and, gentlemen, I want to say to you, that there is no point mentioned in the paper that is of such great help to the student as well as the teacher. Get in close contact with your students; the earlier this contact begins in the history of the student the more or the better will be the results accomplished.

Dr. Brown, of Milwaukee: I would like to drop a little oil upon the discussion, if I can, in relation to thoughts suggested by Dr. Barrett's discussion of the paper. It seems to me that he brings this question before us in something of a wrong light. What he says is true enough, beyond any question, but to my mind it is because of all that the Technic Association, considered in its limited sense, has accomplished, that we are now ready to do something more. We realize through having accomplished so much by the systematic development of one portion of our work, that now it has become necessary for us to systematize and become skilled in other branches of the work. Therefore, it seems to me, regardless of the name, that the change in the purposes of this association, or a broadening and continuation of its purposes, if you may so call it, was decidedly opportune—was by all means the thing to be done, and I think the discussions of the paper, as well as the president's address itself, have certainly demonstrated to everybody the fact that we are now ready to take a great step forward.

Dr. T. W. Brophy, of Chicago: I listened with a great deal of interest to the reading of the able paper by the president. I do not know that I can add a word to what has been said in complimenting him upon the discussion of the subject, except to say, in illustration of one feature of the paper, that a year ago now, after the meeting of this association at Philadelphia, I took a trip down South with my friend whose written discussion has been presented, and we visited one of those beautiful old southern homes in Columbia, S. C., and found in that home a large family. There were ten children in the house, and as we sat at the table these children, the smaller one next to the mother, and so on, ranging up next to the father, presented a most beautiful sight; and while I was down there I never heard a word said in that family about it being large and unwieldy. That is the feature of the paper that I want to discuss. What does the gentleman mean by saying that the class is large and unwieldy? I never heard any such remark made by the teacher from a school where they have large classes. And personal contact is another question. What is meant by personal contact? Is it meant that the teacher—the head of the department—is to have personal contact with each student of his class, or does it mean that his so-called unwieldy class cannot by careful management have its work so systematized that each student will receive personal contact from his teacher. Does it mean that one man is to teach all the class, or is it intended to have the class divided into small classes with an able teacher at the head of each small class, thus giving personal contact with the students? A large family is trained and educated so that each member may become just as useful a member of society, and far more so, than you would get in a family where there is but one child. Now I did not like that phase of the paper and discussion, because a large institution, a large government or a large corporation may be conducted with just as much care, and each individual acting within the domain of the government or the corporation or the association, may be just as carefully managed as though there are only a few. I think that is the weakest part of the discussion that has been entered into here this afternoon.

There is one feature of the discussion I particularly enjoyed, and that is the remarks of Dr. Kennerly; and I see more clearly than ever before the wisdom of cutting the great canal between the City of Chicago and St. Louis, for I have learned for the first time that it has caused the sparks to begin to fly in St. Louis.

Dr. G. V. Black, of Chicago: I was unfortunately out a few moments and failed to hear the reading of the address. For that reason I did not feel like entering into its discussion. Of course, I got some idea of what it consisted from hearing the discussion. The paper presented must have been an able one, to call out such a discussion and I have been very much pleased. I might say a word as to the change of name, I should certainly differ materially from the ideas presented in the discussion by the gentleman from New York, for the reason that I have seen in the tendencies of this association a desire to enlarge the range of subjects taken up. The fact is, that this is the only association of *dental teachers* in the United States in which the subject of *teaching* is discussed. The

Faculties' Association, as we all know, is occupied with legislative work, and the subject of teaching is not entered upon at all in that association, and therefore this is the only association for the discussion of such subjects, and the desire has been very generally expressed that this association take up the whole range of dental teaching.

Now, gentlemen, whatever may be our standing, individually, in the practice of dentistry, if we enter a school room and undertake to teach, we either become teachers or failures, and if we are to become teachers we must study this subject of teaching—pedagogics, if you please. It is as necessary that we study the subject of teaching as it is that we study the technical procedures in our operating for our patients. Or, as we study the conformation of the tooth when operating for our patients, so we must study teaching when preparing to go before our students. We are endeavoring to instruct, therefore we are teachers; we are a body of teachers, and the study of methods of teaching is our business here. We study particularly the methods of teaching in dental schools, but in studying the method of teaching in dental schools we must study the principles of teaching in general.

President H. P. Carlton: Fellow members, I want to thank you for the kind reception you have given my effort. I am more than pleased, especially after hearing the remarks of Dr. Barrett, because he has given his attention principally to the name of our association instead of to the address. I must confess that it was with some fear and trembling that I read his name among those listed for the discussion of my paper, because I expected that he would handle me severely. My efforts were intended to be directed purely and solely toward the *ideal* in teaching. It was not a comparison or a criticism of any class of teachers. I wished simply to draw as far as I was able a *picture* of the ideal teacher, as I had him in mind. I wish to thank you very much, also, for the discussion it has brought out. If it has done any of you as much good as it has me I shall feel satisfied.

DISCUSSION ON DR. A. H. PECK'S PAPER.

(See Page 747.)

Dr. James Truman: I am so much in harmony with the major portion of the paper of Dr. Peck that I feel somewhat at a loss to discuss the subject except in a few commendatory words.

All true teachers must agree with him that the subject of materia medica may be made the least interesting in the curriculum, or it may be made one of the most valuable. This all depends upon the teacher. Many of us may recall the early student experiences when the mere memorizing of the various drugs was the principal part of the study and the miserable hours spent over the effort is not the least of the unpleasant experiences connected with the student's work.

The idea which the essayist endeavors to enforce that the study should be made broad enough to include in its therapeutics systemic conditions, is not one that will be generally accepted. In a general way this should be taught, but until dental students have received a thorough medical education, in connection with the dental curriculum, this does not seem to be possible, nor, under present conditions, would it be proper. There is a positive dividing line between the practice of dentistry and medicine, which, to overstep, means a conflict between the two professions. It is certainly true that the teacher of materia medica should give in a general way information in regard to the "circulatory stimulants and depressants, the respiratory stimulants and depressants, the nerve stimulants and depressants, etc.," but I cannot agree with the paper that it necessarily follows that the dental student should treat a failing heart or syphilis. The time is altogether too short and the dental student has too much to ingather into his brain, to permit a sufficient knowledge to warrant the practice, presupposing it to be a proper course to pursue. The teacher of materia medica and therapeutics has not the time for this, and that which he does give is simply partial culture and superficial knowledge is always a dangerous knowledge.

We are met in discussing this part of the subject with the much considered topic, must students be medically educated to practice dentistry? This is not the place to enlarge upon this, but the idea of the essayist, if practically carried out, must lead directly to the one conclusion, that the degree of doctor of medicine must be the one degree of the future. It is surmised that very few of us are prepared for this.

The essayist's plan of having the students prepare papers and then discuss them is an excellent idea, but it is to my mind impracticable with very large classes. As nearly all dental colleges now have student dental societies connected with them it would seem very appropriate that this should be delegated to these bodies.

The recitation plan, and by this is understood a thorough examination of the students at every lecture, must be accepted as the most important part of the work. It is the only way this subject can be made interesting and at the same time be thoroughly taught. The teacher must do the work that the text books specially fail to do. These books are necessary, but the teacher that depends on them has not the true conception of what is needed in the instruction of this branch.

I fully endorse the idea that materia medica should be combined with special pathology, and, for this reason, would take it out of the first year, where it is generally found, and place it in the second. The two subjects then can be more appropriately combined.

Thus far I am in general agreement with the interesting paper, but must part company with the essayist when he advocates the demonstration of the drug effects on living animals. My experience as a student, and subsequent observations, confirm the conclusions that if such experiments have any value they are confined solely to the operator. It is impossible for the occupants of the benches to see the result, and they must accept the word of the teacher. The effect of these operations upon young men is demoralizing. They come to regard animals as their legitimate prey, and the natural brutality and destructiveness is fostered and encouraged. If vivisection is of value, it must be limited to the discovery of the cause of disease and the proper therapeutic measures to meet it. To make it part of every lecture to determine well known facts, is, to my mind, a violation of all the best feelings of our higher nature. It is, therefore, with extreme regret, as I view it, that the essayist advocates this as an important portion of the dental curriculum and of the teaching of materia medica of which, in my judgment, it forms no part.

No allusion is made to the study of pharmacy in connection with materia medica. In my opinion this should come in the curriculum after a theoretical study of the subject, the year following. This would give one year to the theoretical and one to the practical.

The attempt of some teachers of materia medica, and apparently advocated by the essayist, to extend the subject to include all drugs directly or remotely connected with dentistry, seems an error of judgment. A large percentage of the materia medica of to-day is made of agents that have become obsolete, and to study them is a waste of time both to the teacher and student. The need of the hour is the use of agents in harmony with present medical knowledge and directly applicable to the treatment of pathological conditions met with in dentistry, and in accord with the advanced conceptions of disease.

It is evident that with the constantly increasing demands upon the dental curriculum, there should be an active effort to bring about a lengthening of the time. The schools cannot teach dentistry and medicine in three years, and, as things are at present, dentistry is suffering to an extent that promises to make the student of the future a sort of hybrid, unable to practice properly either branch of the healing art.

Dr. John I. Hart: I am very glad to have had the opportunity of reading Dr. Peck's paper, and I am heartily in accord with his ideas.

In a paper read before the Eighth District Dental Society of the State of New York, in April, 1899, I said: "I firmly believe when students are prepared to study dentistry—and I mean preparation in its broadest sense—that the time will have come when they will take their M. D. with all that that means, and finally take their D. D. S." Everything that has transpired since that time has tended to confirm my impression. Our work is too important, the necessity for thorough diagnosis and treatment too apparent for our men to be but partially cultured. The only obstacle to thorough teaching in this field is the lack of time, and if a sufficient number of teachers agree with me in that respect we can correct that difficulty in the Faculties Association.

In my judgment there is even a greater necessity for a four years' course to-day than existed when the change was made from two to three years. What would become of our co-workers in architecture if they were satisfied to teach now as they did a decade ago? The artistic has not suffered, but the essentially practical engineering branch has been extended. We cannot afford to let our practical work suffer because our theoretical foundation is broadened. A high preliminary standard, supplemented by broad and thorough college education, will cause the next generation of dentists to be accorded the full measure of respect they will deserve.

Dr. S. W. Foster, of Atlanta, Ga.: I am very much pleased to have seen this paper, and I have listened to its reading. We agree with the essayist, that this is one of the hardest, and, we might say, driest subjects our college faculties have to teach. There has been sufficient said to-day as to the method of the successful teacher. In our experience we must know that any man who attempts to teach who cannot devise means and methods whereby the student may become interested, and in a measure enthused in his particular branch, that teacher is a failure, and the college faculty should select another man for that place.

The next question asked, as to how far or how much we should teach. That is a question, to my mind, as it applies to materia medica and therapeutics, that is only limited by the time regulation of our curriculum. I believe of all the branches taught this is one of the most important. We must admit that. It is the crowning and the rounding, as it were, of every student's professional ability; it fills out and gives to him his true profession; it is the blending, we might say, of chemistry, physiology and pathology. And, as a matter of fact, we cannot eliminate materia medica and therapeutics from our course of instruction while we throw into it more of these other underlying fundamental branches. Therefore, I say that we should add to this all that we can which our time curriculum allows. Of course teaching, especially the most important branches, as referred to by our essayist. This question, then, might naturally be asked, how far should we prescribe? We virtually agree with Dr. Truman in his discussion on that point. We will, therefore, not attempt to discuss that.

The essayist says that the teacher of materia medica and therapeutics should teach special pathology. Dr. Webster has said, this afternoon, in his discussion, "When a man is capacitated to teach one thing, he should be able to teach all things," or words to that effect. He recognizes the fact that no one man can teach all the branches as are taught in the study of dentistry. But that leads to this thought, as we are here, gentlemen, to discuss how to teach. In conversation with our estimable friend, Dr. Black, to-day, and as he has stated at previous times, it is his custom to meet with his demonstrators and discuss the methods of teaching in his school, once a week. I believe that that is a valuable suggestion, as it applies to the teaching faculty. I believe that the teacher of materia medica and therapeutics, the teacher of pathology and the teacher of chemistry should know absolutely what the other is doing with regard to his particular branch. There should be a co-operative work in that respect. If we teach successfully the fullness of our profession, we must have co-operation, and to get that we must have an interchange of thought; and the faculty which does not come together and discuss their methods of teaching particular branches is compelled, in a measure, to have greater or less confusion among the students. We all do not see alike, but if we understand each other before we go before our classes, we can in a measure keep a harmonious feeling in same, and, after all, that is the real success in keeping a school together, in my opinion.

The question is asked how best to teach. I cannot agree with the essayist, as Dr. Truman has said, in regard to making practical demonstrations upon living animals. I cannot conceive of the idea of any one getting a full instruction in that respect. I do believe that the student should know the pharmacology of the drugs which he should handle and will handle in the practice of dentistry, and to this extent, in our school, beginning with this year only (the idea conceived), we are having our dental students go into the pharmaceutical laboratory and discuss with the demonstrator in this respect the pharmacology of the drugs which he will use. My great trouble in endeavoring to teach materia medica is teaching the student the individuality of the drug, and the dose equivalent. Now, all you teachers who attempt to teach this branch, no doubt realize the same thing, and for this reason—to overcome this—we have attempted to throw into this work a little of this pharmaceutical experimentation, and I find that it acts favorably.

Another form, of course, we understand object lessons to be one of the best, as the essayist has stated. In our work we have endeavored to drill the students in prescription writing. The essayist has been having a certain number of the class write essays and discuss them. We have been having three or four or five or six of the students to write prescriptions for certain pathological conditions. These prescriptions are brought before the teacher and the class, and then the relative value of each prescription discussed as it applies to the particular pathological lesion for which it was intended. And I must say that I am particularly impressed with this method of drawing out, and making the student think with regard to the therapeutic application of drugs. They begin, then, to study those drugs, which are compatible and incompatible—and we all know that there are a great many practitioners to-day, practicing in America, who could not write successfully a prescription for many conditions. This practice of prescription writing I consider to be one of the best that I have so far adopted in teaching this particular branch.

Dr. Geo. E. Hunt, Indianapolis, Ind.: It is a privilege to be allowed to discuss this excellent paper of Dr. Peck's. The subjects of materia medica and therapeutics have not received their full measure of attention in dental colleges. One reason for this has been cited by Dr. Peck—the lack of a suitable text-book. I mentioned this fact a year ago in this body, and so far as I know, no effort is being made to remedy the deficiency. None of the present works on the subject are adequate. Even granting that the matter presented is good—and that is a pretty liberal grant—the plans of all the works on dental therapeutics that I now call to mind are open to severe criticism. Clifford's book consists of questions and answers—an abominable method for any kind of work. Gorgas' Dental Medicine is so ingeniously disarranged that I defy any casual user to find any particular information without referring to the index. In all of the others the desired information is scattered through several hundred pages of text pertaining to pathology, or operative dentistry, and is unavailable without much trouble and time being spent in the endeavor. An up-to-date text-book, with the first part devoted to general considerations, the second part to drugs, arranged alphabetically by their common names, and the third part to brief treatises on the treatment of various diseases after the manner of Hare's Therapeutics, would be a boon to both students and practitioners.

I would treat of drugs as follows: Head the drug, for instance, aconite. Then the first paragraph would read "aconite (aconitum, U. S. P.) is the tuberous root of the aconitum napellus, a plant indigenous," etc. Only a few lines need be devoted to the derivation and methods of preparation of the drug. Then would come the "physiological action," followed by the "therapeutics," and, lastly, would come the "administration," unless the drug was capable of producing untoward effects, in which case that would come last. Under "administration" the various preparations, official and nonofficial, with their dosage, would appear. All fad therapeutics should be eliminated and there should not be a superfluous word in the book from cover to cover. Such a work is much needed.

The essayist's attitude in regard to the amount of the work to be presented can only be criticised on the score that it does not go far enough. It is my theory that the scientific branches, including anatomy, physiology, chemistry, materia medica and therapeutics, histology, bacteriology and pathology, should be taught in a dental college fully as completely as in the best medical colleges, with additional time devoted to their application to the science and art of dentistry. General materia medica and therapeutics, then, should be taught with the same thoroughness in the dental college as it is in the medical college, and its special application to the practice of dentistry should be elaborated. I am not one of those, however, that believe the dentist is competent to treat systemic disorders, nor do I believe it is his province to do so. Such assertions are the result of misinformation. The better knowledge one obtains of the practice of medicine the more unreasonable those statements appear. The general practice of medicine is rapidly separating into the practice of specialties. Educated physicians appreciate the impossibility of any one person having a sufficiently comprehensive knowledge of the human body in health and disease, to give the best results in the treatment of all ailments. In our larger cities the general practitioner is rapidly becoming limited to the various diseases of which fever is the most prominent symptom, and to lung lesions, and the tendency is to specialize in these. If this is true of the men who devote all of their time to the practice of medicine, it is folly to assert that the practitioner of dentistry, whose opportunities to prescribe systemic treatment are so rare, should feel called upon to prescribe for constitutional disorders except in the most obvious and trivial matters. I do not mean that the dentist should not feel free to prescribe a dose of magnesium sulphate or phenacetin, if it is indicated, but I do mean that if the condition of the mouth indicates gastric or enteric disorders the dentist should promptly direct the patient to one who is better qualified by continual contact with these disorders to conduct the case intelligently and successfully. The study of these subjects by the dental student is simply to enlarge his information, round out his education, and enable him to recognize the necessity for treatment. The otologist and oculist study obstetrics, but in a case of labor, they would be as much at sea as any dento-medical graduate. A more important point than even a good text-book is a good teacher. Dr. Peck has advanced to a position as a teacher of these subjects that few of our men attain. Our dental college teachers should be men who devote all, or practically all, of their time to college work. The hour spent before the class does not begin to measure the extent of the teacher's labors. To properly prepare for each hour in the class room requires several hours of outside work. If this institution can teach the teachers how to teach it will have done a great work.

The value of object teaching in the class room, and of laboratory work, cannot be overestimated. At our meeting in Philadelphia last year we discussed the value of the recitation system quite exhaustively. In those subjects for which there are standard text-books the recitation system is of great value. As I stated at that time, the fundamental subjects of anatomy, physiology and chemistry may be well taught by the recitation system, but I personally could not recommend any existing work on operative dentistry to be used in the manner that Gray or Morris' Anatomy, or Kirke's Physiology may be used. I do not see how Dr. Peck can use the recitation system in his teaching. He tells us himself that none of the existing text-books are fit to use.

I am pleased to have Dr. Peck report that his method of having one student prepare a paper, and others discuss it, was a success. Had he asked my opinion regarding such a method I would have predicted a failure. It is worthy of a trial.

Dr. J. D. Patterson: Mr. President, the hour is late, and I know you all want to go. I had written out a few remarks to make, and I was going to say many things I shall not now, because Dr. Truman covered nearly all the points, and I agree with him in his criticism; so I shall occupy a very short time. It seems to me unfortunate that this subject is discussed here from a medico-dental standpoint (Dr. Peck is a graduate in medicine), instead of from the standpoint of a doctor of dental surgery, and on that account he merges into a line of argument which I do not think, in our present condition, is so very valuable to us.. I will pass very briefly the points I want to speak about. In regard to the D. D. S. writing prescriptions, it is against the law in many states for any one who has not an M. D. degree to write prescriptions. Lawyers who have had experience in jurisprudence say that there is no question, should the point arise on suit for malpractice and damages, that it would be decided that the dentist has no right to write prescriptions for the internal administration of drugs. The board of health will not give you a license to practice medicine in the state of Missouri, where I reside, with the degree of D. D. S. You have no right, then, to write prescriptions for the internal administration of drugs. I myself have studied materia medica and therapeutics in the medical class, along with the medical students, and I believe that this broad knowledge should be our possession, yet I most emphatically disagree when it is recommended that the doctor of dental surgery shall prescribe for the internal administration of drugs. We should religiously keep away from that. It arouses so much antagonism, in the first place, with the medical profession, that we should on that account only let it severely alone. There comes to my office a person who needs a treatment internally for a condition of which I see symptoms in the mouth. They go at once to their physician, with my instructions as to what I think is required. I will not give a prescription for a simple case in therapeutics even. It is the physician's business to attend to it—let him attend to it, it is not ours. If you are an M. D., you have a right, under the law, but even an M. D., when he is practicing exclusively in dentistry, should not give prescriptions for the administration of drugs. Turn that over to your physician. It seems to me that is pre-eminently the proper thing to do.

"What would you think," Dr. Peck says, "of a man enjoying a lucrative practice in a large city like Chicago, or elsewhere, merely giving local remedies in a case of syphilis?" Does he mean a dentist? He must be talking of practicing medicine. If a dentist prescribed administration of the medicine himself, he would be doing the most improper thing he could do, in my opinion.

The doctor speaks of the necessity, especially in the field of anæsthetics, in being able to determine from the pulse the condition of the heart. I beg to say that the condition of the heart as noted in the pulse throb is not in any way a reliable indication; and when there are serious lesions of the heart, there must be auscultation and percussion; there must be markings of special instruments. The pulse alone is a very insufficient and inferior indication. In order to be able to do that a course of clinical medicine is absolutely necessary. We have not the time for that.

In the administration of anæsthetics the physician should always be present. Never do I administer an anæsthetic without the presence of a physician. While I know what remedies to use, and I know, perhaps, as well as some physicians that come in my office, yet that matter is a thing that we must leave in their hands. There must be, as Dr. Truman says, a firm dividing line between medicine and dentistry, and we must obey that very closely—that's my opinion.

I want to add my word to what Dr. Truman and one other speaker, in discussing, said in regard to vivisection. Vivisection, in our day and generation, should, in my opinion, be confined to the laboratories—biological laboratories, especially instituted for experimental purposes. Vivisection, in our day, I believe, is legitimately confined to finding out the results in the prosecution of a knowledge of serum therapy. That is being done every day, being done to-night, in the biological laboratories. Vivisection, it seems to me, should be confined there. The very experiment which Dr. Peck speaks about, anæsthetizing the animal so that it should suffer no pain, would be very imperfect. Let vivisection alone! Let vivisection alone in dental colleges. And do not introduce it, I beg of you, unless you want your dental colleges mobbed. These experiments that he spoke about, and all the experiments that the dental student would need to instruct him, to make an object lesson, have again and again been described to us. If the dental student should not have common sense enough to understand, when he reads the perfect description of the demonstration, then he has no business in our classes. If knowledge must be forced into him through stabbing an innocent animal, then I don't want him as a student. Why repeat such experiments. I say no, no, not at all. I am proud of the dental profession, but I confess I would not be proud of the dental profession which had in it vivisectors for the purpose of object lessons merely.

I thank you very kindly, and, in making any remarks that I have made, Mr. Chairman, I do not mean to reflect on anybody. You are all my friends. You know I am in earnest in what I say. I may make mistakes. You know the old story of the man who always traveled straight and never made mistakes became soon so lonely that he passed away. So I make mistakes, and perhaps you do. But I do think Dr. Peck, in advising the teaching of students who are to receive the degree of D. D. S. to prescribe internal remedies, has made a glaring mistake, and also in advising the object lesson by vivisection.

Dr. G. V. Black: I would like to say a few words just along some of these lines, and as a preface I may say that we are here to disagree, and to discuss our disagreements. I want to reinforce some statements that have been made with regard to this matter of vivisection, and perhaps with regard to the matter of prescribing drugs, and some other things.

We all value the lives of animals. We value the lives of men more. We value the health of men more than we value the lives of animals. Now I appreciate the motive of avoiding pain to animals. I appreciate the motive of avoiding the destruction of animals, I think, as sharply as any one here; yet, if I can, by destroying a comparatively useless animal's life, impress a lesson upon my class, I should say sacrifice that animal. I am not afraid that the dental school will be mobbed. I would not ruthlessly and without the impressment of a lesson, sacrifice an animal; but in teaching anæsthesia I would not hesitate to sacrifice an animal, and I should not feel that I had properly impressed the lesson of the dangers of anæsthesia upon my class if I had not destroyed the life of more than one animal before that class with anæsthetics.

A MEMBER: That is not vivisection.

DR. BLACK: That is practically vivisection. That is what you mean—we use it for our purpose and destroy the life of that animal. That is vivisection, no matter what else we do. We may do various other things with the animal. If I take a frog and expose its lungs and show the peculiarities of the circulation of blood in the lungs for the purpose of impressing the lesson on my class, have I done a wrong thing? Certainly not. We even go so far as to use the human subject for a similar purpose, with an effect that is good. Only a short time ago one of our pupils came to me and showed his arm and said: "Doctor, I think there was a mistake in putting this drug on my arm. It hasn't had the effect that it has had on the arms of the other boys,"—for a number had applied the same drug, and a number had applied another drug and another drug. They were from Dr. Peck's class. "Cassia has been applied here and I have no blister." He had evidently been afraid that he would have a very sore arm, and had taken it off and looked at it, and had finally taken it off before the time prescribed. I said, "Let me see it to-morrow." On the morrow he had a crop of cassia pustules, and he was showing it to the others, and the others were showing theirs, and they were in groups, discussing the effects of the drug, and what it would do if used in this and that position. I tell you, gentlemen, you cannot impress a lesson with words in so interesting a way as it was expressed by these experiments, using the human subject. Of course, this thing must be done with great care and judgment, even upon the animals. It is taught before our classes that vivisection is a serious thing, and it must be done with care; it must be done for a purpose—we must get value received for the destruction of life. Gentlemen, I am in favor of the impressment of lessons, even by vivisection, when that is necessary, to properly enforce them.

I regret that we cannot all be graduates in medicine. Under the circumstances I know that it is impracticable. I wish we could be. We ought to be. I want to make a remark about the pulse. The man who would know the pulse, and know it well, must have practice in the examination of the pulse in health and disease. If he has had this practice, and has studied it closely, dropping the finger on the pulse of his patient will give him an indication—not sufficient to tell just what is the matter—but if there is a serious heart lesion, it will give him an indication that will put him on his guard. He will perhaps drop his ear over the chest to see what that heart lesion is, or see how serious it may be; or, perhaps, this impression that has come from the pulse will lead him in another direction. It is not a heart lesion proper, but it is something wrong with the nervous system of that patient. I would not like to go into a long operation for a patient that comes to me, if when I drop my finger upon the radial artery it presents a sharp, quick, feeble pulse, because the indications show a condition of nervous tension or something else that renders the patient unfit for the endurance of a long, serious operation. And I regret exceedingly that the conditions do not give the opportunity for teaching dental students to recognize these indications which the pulse, properly studied, would give them. It requires a bedside practice, a hospital practice, or a practice in surgery, or a practice in general medicine to enable one to recognize quickly and easily these conditions of the pulse that give warning of danger.

Then, again, our patients are often kept too long in the chair, and a condition of exhaustion of the nervous system will be reflected by the pulse. We ought to be able to note that at once and be able to wind up our operation and stop in time to save serious injury to the patient, which, I am sorry to say, is not always done. I have been guilty, myself, of keeping patients too long. I have recognized that, and have recognized the conditions following—the conditions of ill-health that were the direct result of keeping that patient down too long.

Now all of these things call upon us as practicing dentists, not as practitioners of medicine, to know as much as possible of these things, to teach as much as possible of these things in our schools, and have as many dentists as possible who may recognize these things with the touch of the finger, or recognize conditions that will cause them to call a halt and look further, for other symptoms showing the condition of patients, that they may not do injury. The prescribing of drugs does not belong to the dental practitioner, except in his own field.

Dr. N. S. Hoff, of Ann Arbor, Mich.: This subject of teaching materia medica and therapeutics is one that I am very much interested in, and, like Dr. Peck, I have found that it is sometimes rather an uninteresting subject to teach. Like every one else who has taught this subject, I have experienced the usual vicissitudes in trying to utilize the material we have in print in the way of text-books which Dr. Peck and others before have deplored. We have plenty of resources in the way of works on general materia medica, and splendid resources in the way of general pharmacology. We have also a great deal of material on general therapeutics, but we are sadly lacking in a book which will present the subject of dental therapeutics in a systematic way, and it is therapeutics as the ultimate end which we desire to obtain in teaching materia medica. It is not simply the teaching of materia medica of itself that we desire to utilize. The subject of materia medica is a very small part of the work. I spend comparatively little time teaching the nature and doses of drugs. Formerly much time was spent in discussing the materia medica and pharmacy of drugs. We were compelled to learn the history of a drug, where it came from, what it looked like, what preparations were made from it, and what the dose was. Further than that, we got very little conception of its application therapeutically. One can readily believe this a very dry and uninteresting subject to teach in that way. I have turned the subject around and am teaching it from the other standpoint. I teach it largely from the practical or therapeutical standpoint—what we want the drugs for, etc. I do not teach pathology directly, but incidentally I must, of course, refer to the nature of disease and the application of the remedies for its treatment. In doing so I naturally start at the interesting point—at the chair, or at the bedside, where the remedy is to be used. I experience here the usual difficulty of putting into the hands of my students a proper class book for this purpose, as you all know there is nothing in print that will meet the requirements viewed from this standpoint. I have followed the classification as set forth in Wood's therapeutics. I have experimented with all of the various text-books, beginning at first with Ingersoll's little work, at his own suggestion, then Gorgas' Materia Medica, then Potter's Text-book, then Brunton's large text-book of pharmacology, and then Wood's Therapeutics, where I found something that I could adapt to the teaching of this subject to dental students, because it not only contains all the materia medica that is essential, but also a pharmacological consideration of all the essential drugs, and a classification that can be fairly well adapted to our needs. While it is rather a heavy text-book to put into the hands of the student, it is the most satisfactory one that I know of. Of course, it contains nothing in the way of dental pharmacology, except incidentally. It contains nothing on dental therapeutics, and this I have been able to supply—not to my satisfaction, but very satisfactorily, at any rate, from our general literature, from the journals, and from other text-books in therapeutics. Within the last two years Dr. Barrett's little work on pathology and therapeutics has given me perhaps as much satisfaction as anything else. It is not a work that will supply the place of a text-book, but as a reference book, a book for suggestion, it has been valuable in my hands. Dr. Burchard's work has also been of great help to me. While it is more a work on pathology, everything in it is so well done, the book is so beautifully written, that I have had a great deal of pleasure and satisfaction in using it. With these books, and with reference to classic articles on therapeutics and dental pharmacology which have appeared from time to time in the dental journals, I have been able to secure a course of lectures for class work that has proven tolerably satisfactory. Last year I presented to my class a course of seventy-five lectures. I did very little quizzing, but devoted the entire hour to the lecture, holding written examinations periodically, to see where the students were, because I did not have the time for the quizzing. I had a shorthand report made of the lectures, and this report was printed and put into book form. All who have had any experience in having lectures reported will know that anything done so hastily will necessarily be faulty and incomplete, and contain so many erroneous statements as to make it rather hazardous to attempt to utilize it as a text-book. But this was sufficiently accurate so that this year I am using it as a class book. I have had a sufficient number of copies reprinted by typewriters' stencil, and require each student to have a copy of it.

I am not lecturing this year at all, but am quizzing entirely. I spend the entire hour quizzing. At the beginning of the hour my students are seated in the lecture room. We have a seat or a bench, such as is used in the public schools—a desk with a top to it—two students can be seated at each desk. The desks are numbered, so that there is an odd and an even number in each seat. At the beginning of the hour I put two questions on the blackboard, one numbered 1 and the other numbered 2. Odd numbers will write on question 1, and even numbers on question 2. These questions are very brief, something they can answer on a little slip of paper not more than four by six inches. I allow from fifteen to twenty minutes to answer these questions. Sometimes they do not get through in twenty minutes. When requiring a little more writing or more thinking I extend the time to possibly a half hour. The men have no chance to communicate with each other, as each has a different question. It is always a question made up from the lecture of the day or the day previous—that is, the lecture they should have had were I giving the lectures in regular order. After the papers are handed in I give the answer to the question myself, so that each man knows whether he has answered the question properly or not, or I call up some one and develop the proper answer by a quiz. Or I call up a student and read some one of the answers and have it criticised. Sometimes I read one of the answers and call for voluntary criticisms. I never read all of the papers, and do not mark them. There are so many of them it would be a great task to attempt to read them, but I have in my private room a lot of nails driven into a board on the wall. I make it obligatory for each student to distinctly number and put his name on each paper before handing it in. I have a nail for each man's name, and I stab his paper on the nail for future reference. I shall read some of them some time, and I do read more or less of them. I pick out the man of whom I am a little suspicious that he is not doing his work properly and read his papers, and if his papers are not what I think they should be, I quiz him very often. The students do not know that I don't look over their papers. They do not know but that I do. By this plan every man in the room expects to be quizzed every day. Sometimes the written questions are of such a character that I do not do any quizzing during the hour, but explain the question and comment on the replies. Sometimes we spend the whole hour in a discussion of the questions. I may quiz the students or they me. Very often the quiz is directed at me. I get quizzed from all over the room. The students frequently ask questions that are quite pertinent. I am often surprised at the questions that are asked. Usually, though, I quiz the men. When I quiz a man I don't quiz him on the exact thing reported in the lecture that he has before him. I don't ask him what a dose of a drug is that we are discussing, but I say something like this: "Yesterday a patient came into my office, and he had a first lower molar tooth that had such and such a condition—and it is a condition that the remedy we have under discussion is applicable to"—I say, "What shall I do for that patient?" By asking a question something like that—I do not always put it in just that way,—frequently I do—he will start to tell me what to do. Very often he will go back to some other lecture, he will think of something back that we have gone over already, or something that has been told him by some other instructor in the treatment of another case, or he will bring up a treatment some other teacher has given him, that I have not given him at all. I make him tell me why he gives that treatment, and I confine him to that particular case and that particular condition. Oftentimes he will not recognize the condition I have indicated. The first thing is to make him give a complete and correct diagnosis, and then I tell him to prescribe the necessary treatment. Sometimes I do not quiz but one or two men during the half hour. But if I do keep one man on the floor all that time, I have the attention of every one in the room—they are all being mentally quizzed if not orally. I get as much out of quizzing that man as if I quizzed the entire class. One should avoid giving a whole hour to one man unless the rest of the class is kept interested.

This is only an illustration of another way of teaching, as the essayist has stated, by the object method. It brings up the actual object which students are dealing with every day, and makes such an impression on them that they say, "I had a case like that once and I want to know about it." I try to make the subject so practical that they become at once interested in the subject. I have never had so interesting exercises in my classes before—interesting to me. I get enthusiastic about it and the students do, too. They come to me after the hour is over and want further information about the case we have considered. They have had cases like it, or have seen them. Sometimes they want information on other cases not pertinent. I have to refer these until they come up under their proper classification. It requires a good deal of wit and wisdom to know which question to answer and which to allow them to answer. I have found this one of the most interesting methods I have ever adopted in teaching, and I think it is going to be one of the greatest value to my students. I do not know that I shall continue it longer than this year, as my text-book may wear out on me. To carry on this kind of class work a proper text-book is essential. The students must have something to study beforehand, so that they will come into the class room with some preparation. I have found this method of teaching this subject not only one of the greatest interest to me, but it has been of value to me, and I am very sure will be helpful and valuable to my students. If any of you become weary of your methods and can put into practice this method, I hope you will become interested in it. I think it will take a great deal of the tedium out of your work, and make it more interesting not only to yourself, but to your students as well. It permits them to present the subject from their own standpoint—the standpoint from which they are thinking about it. And, best of all, it enables the teacher to accurately find out where the student is and what he knows and wants to know. An immense advantage.

DR. T. W. BROPHY: I was very glad to be present yesterday and hear the paper of Dr. Peck, and I cannot say too much in commendation of it. The teachings of the paper, it seems to me, are sound.

Some of the remarks that were made in discussing it surprised me a little. In fact, they surprised me not a little. I wondered, while some of the gentlemen were speaking, what are the objects of certain chairs of our schools? For instance, why do we have a teacher who engages so much of the time of the students in presenting the subject of materia medica and therapeutics, if it is not for the purpose of qualifying these men to make use of the remedies and the methods of procedure that he advocates? If it be true that the dentist should not prescribe remedies, if it be true that he should not make use of the drugs that he is taught to use, and use them in the way that his professor explains, then such a chair should be abolished, because it is not fair to take up the time of young men sitting in the benches and paying their fees for instruction, in teaching them certain departments of science which they, through the law, as was said, cannot employ after they graduate. I hold that every chair, that every department taught in a dental college, is taught in good faith on the part of the teacher and of the institution, and that the student who expects to receive this instruction is qualified to use it after he gets it, and, I repeat, if he cannot, by restriction of the laws of a state, or of the nation in which he lives, use what he has learned, then the chair should be abolished. I hold that a man who receives instruction in the administration of remedies or in the performance of surgical operations or anything else in any of our dental colleges, has the right to make use of it, and if he makes mistakes he is amenable to the laws of the state for malpractice. It is not a question of possessing the degree of M. D. at all, that has nothing whatever to do with it. In England the surgeons have not those degrees in all cases. They have their qualifications, however, as surgeons. They practice surgery; they do it under the laws, and if they make mistakes they are punished according to the laws. The laws of our states have chartered our institutions to go on and teach certain branches, and if they teach those branches the laws of the state will protect the man who goes out to make use of his knowledge. There is a mistaken idea, it seems to me, of what the degree of doctor of medicine empowers a man to do who possesses it.

A MEMBER: You mean doctor of dentistry.

DR. BROPHY: I meant exactly what I said. The degree of doctor of medicine, what does it empower a man to do? Would any one assume for one moment—I would perhaps better relate a little experience I had in Philadelphia a few days ago when Dr. Kirk was discussing with me this very question. He said one of the most distinguished members of the medical faculty told him, about eight or ten years ago, that the degree of doctor of dental surgery was an evidence of a partial culture only, or a partial education, being so—I will use the expression—being so short-sighted as to believe that the degree of M. D. meant a full culture. Now I do not think there is any man who has a thorough knowledge of what the course of instruction in medicine really is who would state that a man who bears the degree of M. D. is qualified to take up and intelligently practice all of the departments of medicine. Is it not true that the man who devotes himself to the treatment of the eye and the ear naturally feels that his knowledge of cutaneous diseases is not very sound? Would he, then, presume to treat cutaneous diseases on a par with a man who devotes himself specially to that branch of medicine? No, sir! He would do exactly as we do—and in this I agree with Dr. Patterson—he would put his patient in the hands of a man having under treatment from day to day those suffering from the kind of malady affecting his patient. For instance, if a man were suffering with a specific disease—syphilis, for instance—we might treat him and treat him perhaps as well as could be; but we do not need to do that. Nor do we need to take up and attempt to practice gynecology; we would place our patients in the hands of some one devoting himself to the treatment of that class of disease.

The curriculum of our dental schools has broadened, and is yet broadening and including other branches of learning. We are qualified to prescribe remedies. We must not be told that we have no right to administer anæsthetics. Who is to say that the profession that brought to humanity that great boon, anæsthesia, should not have the right to use it? Practically, if they were to do that, they would deprive us of our birthright. We have a right to use it, but we must know, if we use it, how to use it, and under what conditions to use it. We must know how to make a diagnosis of any malady that may confront us. The man who would make use of ether in his practice without a knowledge of, for instance, albuminuria, or any of the renal diseases, would be groping in the dark. A man who would do that might be punished according to law for not observing the precautions that are necessary in the interest of his patient. The man who would administer chloroform to one that has a weak heart, who has an intermitting pulse, or who has at times syncope coming on without any cause apparently—any external cause—or a cause due to an internal disease, would be doing wrong. Consequently, we open up here a new field, we open up a branch we are called to add to the curriculum the chair of physical diagnosis; and the time is now come when the department of physical diagnosis must be a part of the dental curriculum; and I do not think the time will be long until we will see every dental college in the country giving careful instruction in the physical signs of disease.

These are thoughts that came to me during the discussion last evening. The discussion was merely a medley of opinions, and while we look upon our work and think of it, and think of how little we are doing now compared with what we are yet to do—those who are to follow us are to do, and when we think of how we have gathered up as much as we have, we look back, and are very proud of our achievements; and yet, when we sit down and reason the matter out carefully, we cannot help but feel that we are doing very little indeed compared with what is to be done.

I cannot agree with one of the speakers of last evening who stated that we should not administer remedies. What is there that is used in medicine that calls for better judgment than the use of anæsthetics? When a patient goes into a collapse during an anæsthetic, the dentist thinks, "Why, I have no right to administer remedies; what am I to do?" If he cannot administer remedies, he must lose his patients, probably. He *must* use remedies, he *must* know how to use them, and to use them with the highest degree of intelligence and according to the best methods.

That is all I have to say. I want to congratulate the association on this paper. Like all the papers of the author, it was a good one, and I hope he will keep it up and stick right to that line of work, so that the schools all over this country will engage in that careful teaching of therapeutics that he has outlined. I hope they will soon come to it, and when they do, our profession will rise in the estimation of all.

I want to say one more word. I know I am talking too long. I am talking mighty near as long as Dr. Hoff did. When I arose I didn't mean to. I had the good fortune to be present in Paris at that great congress. There has never been anything said about that in this meeting. I don't know as I will have another chance to speak about it. I want to say to those of you who were not there that that was the greatest meeting of dentists that the world has ever known. There was more work done there at that meeting for the advancement of the dental profession than was ever done before in any meeting, but as the papers come out now, as you see them in the *Dental Cosmos,* if you read them you will find that there were dentists who were advancing ideas which will revolutionize the practice of medicine. Read, if you please, a paper of Dr. Michael's, of Paris, on the examination of the saliva. He has accomplished so much from a dental standpoint, and has shown to the satisfaction of those who have been close to him that by careful examinations of the saliva we are able to make a diagnosis of almost any form of disease known, particularly those affecting the general system. The examinations that he has made have convinced those who are familiar with them that the methods that he employs are far superior to those examinations of the urine, as has been done heretofore. And by these examinations he is able to detect maladies of the different tissues of the body that is most marvelous. Then the other papers invite your attention. These papers are coming out now in the *Dental Cosmos*, and those of you who have not yet read them will be surprised to see the work that was done in that congress. I hardly know how many years it will take through the *Cosmos* to give them all. But it was a great meeting, and when we have the next one we will have one still greater, I have no doubt.

Dr. G. V. Black: I want to say a word that Dr. Brophy failed to say. First, I want to call your attention to the work of Dr. Michael in Paris, that you may watch the progress of thought in that direction, because it is the direction of thought that must necessarily, as I take it, become prominent in dentistry within a very few years. With regard to this matter of the examination of the saliva, not only to diagnose general diseases, but it points directly to the conditions—the physicial conditions—of the cellular elements and juices of the body which bring about caries and which bring about immunity from caries of the teeth; and it was this particular point that induced Dr. Michael to go into this study, and his study of the other diseases in connection with this was simply incidental to the study of the conditions in which caries of the teeth occurs and in which immunity to caries of the teeth occurs. He has entered the wedge in the study of the cellular elements and juices of the body with reference to this subject. It will necessarily become prominent within a very few years. We will have to wait, possibly, a number of years for the perfection of this class of study along other lines before we can make it effective in our specialty; but the time is coming, and those who do not follow this, and follow it carefully, will in a few years undoubtedly find themselves behind the times.

Dr. Brown: May I take the liberty again of trying to keep this discussion together? It seems to me that we are talking of two different subjects under one head. I am satisfied that no one here wishes to authorize the dentist to prescribe for general diseases, such as typhoid fever, scarlet fever and various other affections of that kind. Possibly that was what was meant by the gentleman who objected to the dentist giving prescriptions. On the other hand, while the discussion seems to be extreme, I am satisfied no one here can rightfully object to the dentist having the same privilege that the oculist and the aurist and the other specialists have, of giving such remedies as will help the particular cure that he is trying to effect, in his own special field, and without such remedies it seems to me no one can hope to succeed. An inflammation is inflammation, barring certain differences of the tissue, their vessels and nerves, and so on, but practically the principles of inflammation are the same, and I think the remedies that Dr. Peck called attention to, particularly with reference to dentistry and the teaching of dentists, which he desired to emphasize, if I understand his idea, were such as were necessary to be used in almost every inflammation of a serious nature that we have to deal with in dentistry; and it seems to me if we can bring this thing to a point where we can all agree—and I am sure we can, that we will then have accomplished something valuable in this direction.

Dr. F. B. Noyes, of Chicago, Ill.: I am tempted to branch off on certain things which, as I take it, do not strictly belong to this institute—mainly the position of dentistry as a profession, and some things in connection with topics presented in the paper: the use of animals as teaching agents. The discussion of the position of dentistry as a profession does not strictly belong to this institution, and the discussion of vivisection as a method does not strictly belong to this institution; but we are concerned with teaching methods, and, in connection with the discussion of this paper, with teaching methods in the presentation of materia medica and therapeutics. Now as such I wish to speak for just a moment in regard to vivisection. I do not want to call it vivisection, because there are horrible suggestions and fantasies created by that word. There is in the minds of men and women over the country, connected with the word vivisection, the idea of strapping an animal down to a board, muzzling him with gags, and cutting him to pieces while he is alive and sensate. Now, gentlemen, no one here will advocate that method in teaching our profession or any other. It may possibly rarely be used for investigation work. It may possibly be justified, in rare cases, but nothing of the kind is suggested in the paper. On the other hand, how are we to know the mechanism of the human body unless we study it? Would any one advocate that an engineer is not to study the machine which he has to run, that he is not to see that machine in operation? And if we are to treat the human mechanism—the vital mechanism—infinitely more complicated and inter-related, are we not to study that machine as it stands still and as it works? Am I not, in the preparation of my material for histological work, to kill animals, to remove their organs while the life is still in the organs? The animal feels nothing: the animal knows nothing more—it is as an animal dead, but its tissues are still alive, and I want those tissues while they are alive, to study. Again, in regard to the phenomena of life: how are we to study the phenomena of circulation and respiration, and the phenomena that involve mechanisms unless we watch those mechanisms? The value of that object teaching I want to emphasize. We may describe the phenomena of respiration and the effect of it—you may show that in models—a thing that has not been suggested, perhaps, by constructing rubber models, for circulation—but in no way can we produce the impression upon the mind of the student as he will receive it while watching the thing itself. Again, I want to repeat, we may teach him all about respiration, but he does not know what it means until he studies it himself—until he observes it himself. He does not properly appreciate it. The demonstration to a whole class, which may be in a certain sense imperfect—the value of the laboratory method, which has been suggested by the doctor, following out, repeating individually what he has seen, is of more value still, but I want to emphasize, especially as a teaching method, the object teaching—the observation of the actual thing.

Dr. A. H. Peck: Mr. President, I am delighted with the reception accorded my paper by the members of this institute. Had every one who spoke upon the subject had nothing but words of commendation I should certainly have felt that my mission here had been a failure, for if there is anything that I do dislike to hear in these meetings, it is nothing but words of praise and commendation for the essayist and the essay.

I was not disappointed when the remarks of Dr. Truman were read in this discussion, for I had talked with him not many months ago on these very subjects, and knew his sentiments in regard to these matters. I expected exactly the discussion from his pen that we listened to. I was somewhat surprised, however, with the extent of the vigor more than anything else, thrown into the remarks of Dr. Patterson. However, I know that Dr. Truman and Dr. Patterson are absolutely sincere in their beliefs in this connection, also in what they do and say, and in that respect they draw out from me nothing but admiration—for I love to see a man of convictions, and a man of sufficient courage to state his convictions. However, I disagree—I cannot help but disagree with the sentiments of these two gentlemen, and with all due respect to them, as one of the last speakers this morning has hinted, this idea of vivisection with any other name, would not appear half so bad as it does when that word is used. I purposely avoided the use of that term, so as to make this work, or this particular part of the demonstrative work in my department, as mild to your sensitive natures as possible. I would not advocate the reckless use of animals in teaching in this department or any other. I would not for anything carry this particular work to such an extent as to imbue the members of the class with a reckless desire, if you please, to appropriate animals to their uses in this particular, and abuse the use of them. I want to say this, that much of the most valuable knowledge I possess in this connection I have gotten through these means, and I believe there is no other method by which we, who are teaching these subjects as I try to teach them, can employ with equal effectiveness to impart knowledge to the members of our classes. I would like to ask those who shrink from the use of an animal for these purposes in the manner which I have advocated, if they found themselves out on the plains, far removed from any settlement and were hungry, would they shrink from the appropriation of an animal to satisfy their hunger? By no means. We all like a nice roast rabbit, or a nice juicy piece of beefsteak when we are hungry. There is a parallelism in the comparison which I shall make, although it may seem to some there is not. Our dental students are before us in the lecture room; they have paid their money and they are giving their time; they are hungering after knowledge; they are entitled to the best we can impart to them. It is our duty as teachers to employ all legitimate means at our command to furnish, in the most impressive way, that knowledge for which they are hungering. If I can best impart it by the proper use of an animal, I shall continue to do so. My conscience shall remain untroubled.

I did not intend to advocate that dentists should be expected to prescribe for all systemic disorders that in any way have a bearing on oral diseases or manifestations. I would not attempt to do that myself. However, in regard to the remark that Dr. Hunt made in this connection, that when he went out of the opera house with his medical diploma in his hand he felt that he was just as capable of entering into this field of work as was any other member of the class, I wish to state, and I state it honestly, that when I walked out of the opera house with my medical diploma, for which I had labored hard, I felt that I had only just gotten a start, that only the foundation was laid. I have tried, by hard work, through the years that have passed since that event to supplement the start which I then had, and I feel to-day that I am in a position much better able to prescribe for these general diseases than I was at that time. Of course, Dr. Hunt no doubt meant what he said as a joke, but I am glad to use it as an illustration, to drive home to you the manner in which we should take hold of these things, and in which we should endeavor always to prosecute them. The thought which I wish to impress you with is this: That the dentist in treating the local lesions of syphilis, e. g., as manifested in the oral cavity, who is unable to recognize the necessity of systemic treatment, and I know there are many like this, that dentist, in my estimation, is a failure in the practice of his profession.

Dr. G. E. Hunt: I don't know whether you believe in the rheumatic diathesis as a cause for pyorrhoea, but if you do, and a patient presents himself to you, do you give the constitutional treatment yourself?

Dr. Peck: If that is intended personally, I will say that I would treat the general conditions myself, and I am treating a number of just such cases at the present time. I would not impress you with the idea that I would expect every practitioner to do these things, but I want every prospective practitioner of dentistry instructed before he leaves the college, so that he will at least be able to recognize the necessity of proper attention being given to the systemic disorders that are constantly aggravating the local manifestations in the mouth. If we can go a step farther, and impart to them the necessary qualifications that they may be able to properly prescribe for such systemic diseases, I say so much the better; and I stand ready to hail the day when dentists shall have this knowledge.

Some one, during the discussion, has said the pulse is not at all times an accurate index of the various lesions to which the heart is subject. Well, who says it is? I will say this, that he who is familiar with the diseases to which the heart is subject, and with the various methods of diagnosis, will find the pulse a much more accurate index to some of the lesions than he who does not possess this knowledge has ever dreamed of. It is my judgment that our students should be well drilled in this line of thought.

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ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

NATIONAL DENTAL ASSOCIATION.

The fourth annual meeting of the National Dental Association is now a matter of history. There were nearly four hundred dentists in attendance from all parts of the United States and from Canada, representing many of the leading members of the profession. The Wisconsin State and Milwaukee organizations gave the convention their most cordial support and entertained their guests in a most hospitable manner.

The arrangement for locations of general program and clinics caused a little confusion, but there was from start to finish an interested body of dentists attending and good material presented. Exhibits were unusually good and various.

Special interest centered in Mr. J. H. Worman, United States Consul tö Munich, Germany, who told of efforts to suppress "Diploma mills" in Illinois. The association voted their moral and financial support and appointed a committee to coöperate with those who are fighting this shameful practice, which has brought such discredit to American dentists and her reputable institutions.

The report of Dr. Jno. S. Marshall, President of Examining Board for Dental Surgeons for the United States, was also received with enthusiasm. The next meeting will be held at Niagara Falls.

MEMORANDA.

Dr. L. S. Tenney is in Europe for a vacation.

Dr. L. K. Fullerton, of Denver, visited Chicago in July.

Everybody has gone fishing or hunting or boating or to the woods.

Dr. L. C. Goddard, of San Francisco, spent a few days in Chicago in July.

Dr. H. A. Cross and wife are spending the month of August in the mountains of Colorado.

Dr. T. W. Brophy was made President of the Federation Dentaire Internacional, representing seventeen countries.

Dr. Garrett Newkirk, of Los Angeles, Cal., has been spending a part of his vacation in Chicago. He attended the National Dental Association meetings at Milwaukee.

NORTHERN IOWA DENTAL SOCIETY.

The seventh annual meeting of the Northern Iowa Dental Society will be held at Arnold's Park, Lake Okoboji, September 3, 4 and 5. Hotel rates, $2 a day. William Finn, Secretary.

STOLEN.

The last copy of the last edition of Dr. L. P. Haskell's Student's Manual has been stolen from him. If any one has a copy which they are willing to part with the doctor will gladly pay for the same.

A NEW SOCIETY OF SPECIALISTS.

The Society of Orthodontists held their first annual meeting June 11, 12 and 13, at St. Louis, Mo. Officers: President, Edward H. Angle, St. Louis, Mo.; Secretary, Milton T. Watson, Detroit, Mich.

OFFICERS OF NATIONAL ASSOCIATION DENTAL EXAMINERS.

President, John F. Dowsley, Boston; Vice President for East, Chas. A. Meeker, Newark, N. J.; Vice President for South, J. W. Hall, Ala.; Vice President for West, B. L. Thorpe, St. Louis; Secretary and Treasurer, J. Allen Osmund, Newark, N. J.

OFFICERS OF NATIONAL DENTAL ASSOCIATION.

President, J. A. Libby, Pittsburg, Pa.; Vice President, East, S. H. Guilford, Philadelphia, Pa.; Vice President, West, Wm. P. Dickinson, Minneapolis, Minn.; Vice President, South, L. G. Noel, Nashville, Tenn.; Recording Secretary, A. H. Peck, Chicago, Ill.; Corresponding Secretary, Josephine Pfeifer, Chicago, Ill.; Treasurer, Henry W. Morgan, Nashville, Tenn. Executive Council, H. J. Burkhart, B. Holly Smith, J. Y. Crawford, M. F. Finlay, C. C. Chittenden. Executive Committee, C. S. Butler, W. N. Cogan, G. V. I. Brown. Committee on State Organization, J. Taft, Jas. McManus, H. W. Morgan. Publication Committee, A. H. Peck, F. L. Gilmer, G. V. I. Brown. Local Committee of Arrangements, H. J. Burkhart, M. O. Cooley, C. W. Stainton.

Next place of meeting Niagara Falls, N. Y.

COLORADO STATE DENTAL ASSOCIATION.

At the annual meeting of the Colorado State Dental Association held in the Brown Palace Hotel, Denver, July 9, 10 and 11, the following officers were elected for the ensuing year: President, J. Stewart Jackson, Denver; Vice-President, Theodore Ashley, Canon City; Secretary, W. A. Brierley, Denver; Treasurer, Wm. Smedley, Denver.

The next annual meeting will be held in Colorado Springs during June, 1902.

W. A. Brierley,
Secretary.

OFFICERS OF NATIONAL ASSOCIATION DENTAL FACULTIES.

President, Dr. Wilbur F. Litch, Philadelphia; Vice President, Dr. G. V. I. Brown, Milwaukee; Secretary, Dr. J. H. Kennerly, St. Louis; Treasurer, Dr. W. H. Morgan, Nashville, Tenn. Executive Committee, Drs. H. B. Tileston, Louisville, Ky.; S. W. Foster, Atlanta, Ga.; D. J. McMillan, Kansas City; J. B. Willmott, Toronto, Canada. Committee on Law, Drs. H. W. Morgan, Nashville; W. M. Montell, Baltimore; F. D. Weisse, New York. Ad Interim Committee, Drs. J. P. Gray, Nashville; W. T. McLean, Cincinnati, A. H. Peck, Chicago.

PATENTS OF INTEREST TO DENTISTS, RECENTLY GRANTED.

675,881. Artificial tooth, Francesco Cassullo, Verezzi, Italy.

676,488. Self-oiling pulley, Arthur W. Browne, Prince's Bay, N. Y., assignor to S. S. White Dental Manufacturing Co., Philadelphia, Pa.

676, 465. Rubber dam holder, Wm. Lowenthal, South Orange, N. J.

677,268. Dental instrument, Roscoe B. Power, Green Bay, Wis.

677,565. Dental clamp, Jesse A. Dunn, Chicago, Ill.

677,577. Dental forceps, Howard N. Lancaster, Chicago, Ill.

11,920. Reissue dental engine, Oscar H. Pieper and A. F. Pieper, Rochester, N. Y.

677,947. Dental floss holder, James W. Cowan, Geneseo, N. Y.

678,101. Package of dental floss, James W. Cowan, Geneseo, N. Y.

677,975. Dental apparatus, James M. Gilbert, Dallas, Texas.

678,182. Tooth or dental clamp, James W. Ivory, Philadelphia, Pa.

678,056. Tooth powder box, Charles H. Stadlinger, Buffalo, N. Y.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

CHICAGO DENTAL SOCIETY.

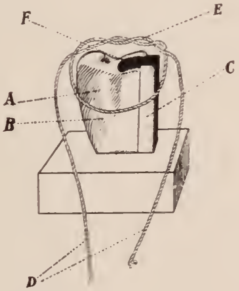
Officers for year 1901-1902: President A. B. Clark; First Vice President, G. B. Perry; Second Vice President, B. D. Wikoff; Recording Secretary, Elgin MaWhinney, Venetian Building; Corresponding Secretary, C. S. Bigelow; Treasurer, E. R. Carpenter; Librarian, H. W. Sale.

Program: October—"Ideals," Dr. R. C. Brophy; "Fifty-six Years of Experience in the Laboratory," Dr. L. P. Haskell. November—"The College Bred Dentist and His Duty in Guarding the Name of His Profession," Dr. H. Franz; "Crowns Without Bands," Dr. F. E. Roach. December—Symposium on operative dentistry, Dr. D. M. Cattell, Dr. W. E. Harper, Dr. F. H. Skinner. January—Exhibits of new instruments and appliances, Dr. J. E. Keefe. February—

"Observations in Professional Circles During an European Trip," Dr. T. W. Brophy; "Some Aspects of Oral Hygiene," Dr. L. H. Arnold. Annual Banquet. March—"Saliva," Dr. J. B. Dicus; "Syphilis in Dental Practice," Dr. G. T. Carpenter. April—President's address. May—"The Manufacture of a Porcelain Crown from Beginning to Finish," Dr. E. M. S. Fernandez; "The Use of Matrices," Dr. G. W. Dittmar. June—"Some Thoughts on the Condensation of Gold," Dr. D. M. Gallie; "Sterilization of Putrescent Pulps and Filling Roots," Dr. J. D. Pfeifer.

TO THE EDITOR OF THE DENTAL REVIEW.

Sir:—I beg leave to call the attention of your readers to a new tie which I accidentally made some months ago. It has been of so much use to me that I wish others to know about it.



NOTE:—The illustration shows the practical application of the Wedelstaedt tie. The case is supposed to be a cavity in the mesio-occlusal surface in a lower right third molar. The cavity has been prepared for the reception of an amalgam filling. A–Tooth. B–Buccal surface of the tooth. C–Matrix. D–Thread. E–Half surgeon's knot which is on the lingual surface of the tooth. F–Cavity in the mesio-occlusal surface.

The tie is simplicity itself. A half surgeon's knot is first made in the center of a piece of thread about eighteen inches long. The illustration shows how the thread with the tie can be adjusted to securely hold a matrix in position. It is simply placed over the tooth and matrix and then the thread is drawn tight. The usual knot is then made on the buccal side of the tooth. The half surgeon's knot should be placed on the lingual side of the tooth. By using the Wedelstaedt tie, a double ligature is easily and quickly placed around a tooth or a tooth and matrix. The tie is also used around the crowns of teeth to hold the rubber dam in its position. As a foundation where a number of teeth are to be ligated with thread, I have found it of greatest value. Its great usefulness will quickly suggest itself to any practical man.

Yours truly,

E. K. WEDELSTAEDT.

OBITUARY.

M. C. McNamara, D. D. S.

Dr. M. C. McNamara, an old resident of St. Louis, died June 16, 1901, at Alexandrian Brother's Hospital of paralysis. In his prime one of the most successful dentists, having at one time an income of not less than $20,000 a year. The St. Louis Dental Society held a special meeting at Dr. Conrad's office 3666 Olive St., on June the 17th. After several short addresses by a number of the members the following were chosen to act as pall bearers: O. H. Manhard, Wm. Conrad, Walter M. Bartlett, John H. Kennerly, B. L. Thorpe, P. H. Eisloffel, John G. Harper, Abel J. Prosser and A. Tschirner. A committee was appointed to draft a biographical sketch of the deceased. The following is their report:

Dr. M. C. McNamara was born in 1829, in Ontario, Canada, of Irish parentage. He engaged in mercantile pursuits there in his earlier years and there married Miss Katherine Aquesta Martin, fourth daughter of William Francis Martin, a civil engineer in the employ of the British Government; he was also a member of the Council in London, Canada.

In 1863 Dr. McNamara removed to Philadelphia, and a year later came to St. Louis.

Soon after his arrival in St. Louis Dr. McNamara was graduated from the St. Louis Dental College, and began the practice of dentistry. Later he occupied a chair in the college.

In 1896 Dr. McNamara lost his wife and since then has taken little part in active business.

He was a member of the Knights of St. Patrick and of a number of charitable and Catholic religious organizations. He was a former president of the St. Louis Dental Society, and a member of the Odontological society of St. Louis, and Missouri State Dental Association.

Dr. McNamara had a family of seven sons and two daughters. The survivors are four sons—Joseph T., John J., William F., and Edward J., and two daughters, Miss Frances K. McNamara and Mrs. F. L. Linton.

Dr. McNamara was an all around dentist and took great pride in making his operations as near perfect as possible. He was ethical in every sense of the word. For a number of years he insisted on entertaining the St. Louis Dental Society at its annual meetings for the election of officers. These meetings were held at his spacious residence; after the business of the session was disposed of, an elegant spread was partaken of in the dining room.

Personally Dr. McNamara was a fine specimen of an Irish gentleman and generous to a fault.

Having been long connected with the Jesuit Church, formerly at Ninth and Washington Ave., by special permit he was buried from St. Francis Xavier Church, Grand and Lindel Boul., Rev. Father Daniel McErlane, S. J., officiating, and was interred in Calvary Cemetery, Tuesday, June 18, 1901.

John G. Harper. .
William Conrad. } *Committee.*
Adam Flickinger.

William McKinley.

Born Niles, Ohio, January 29, 1843.
School Teacher, Poland, Ohio, 1860.
Enlisted Union Army, June, 1861.
Second Lieutenant, September 24, 1862.
First Lieutenant, February 7, 1863.
Captain, July 25, 1864.
Brevet Major for Gallantry, 1865.
Admitted to the Ohio Bar, 1867.
Elected States Attorney, 1869.
Elected First to Congress, 1876.
Re-elected, 1878, 1880, 1882, 1884 to 1890.
Elected Governor of Ohio, 1891.
Re-elected Governor of Ohio, 1893.
Elected President United States, 1896.
Re-elected President United States, 1900.
Shot by an Assassin, September 6, 1901.

Died Buffalo, New York, September 14, 1901.

THE

DENTAL REVIEW.

VOL. XV. CHICAGO, SEPTEMBER 15, 1901. NO. 9

ORIGINAL COMMUNICATIONS.

JUMPING THE BITE.*

BY ROBERT DUNCAN MCBRIDE, D. D. S., DRESDEN, GERMANY.

The esthetic correction of the arrested development of the inferior maxillary, known as "jumping the bite," has been a subject of no little controversy during the last decade of the nineteenth century. Eminent men in the field of orthodontia, entertaining skeptical ideas as to the possibility of producing the absorption and deposition of tissue that must necessarily take place, either in the glenoid cavity or some part of the inferior maxillary, in order to stationarily hold the lower jaw in an advanced position, characterize the operation as impossible, or as one of a questionable propriety. While others, no less eminent, ignoring the essential physiological changes incident to a successful operation, and arguing from the result of correct occlusion and harmony of facial contour, when the patient has acquired the habit to bite forward in masticating occlusion, unhesitatingly claim that jumping the bite is the simplest operation in orthodontia.

As I interpret the language of the former they, with few exceptions, unconditionally admit the truth of the latter's assertion. They do not dispute the fact that the lower jaw has the capacity to reach forward sufficiently far to bite in a normally arranged occlusion; they simply make the intelligent inquiries, "Can the condyle be moved forward and be made to unconsciously stay there permanently?"† If so, "The point is, what takes place?"‡

At the World's Columbia Dental Congress there was a discussion on the question, "What are the etiological factors in production of (a) the protruded lower jaw, (b) the retracted lower jaw? When this form of irregularity is corrected by 'jumping the bite' does a compensating adjustment take place in the temporo-maxillary articulation?" However well the theories entertained by scientific men account for etiology of these deformities, to my knowledge there have been no investigations made as to what anatomical changes do take place in order to produce this unconsciousness on the part of the patient, and the question remains scientifically and physiologically unanswered.

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* Read before the American Dental Society of Europe.

† Dr. Farrar, *Dental Cosmos,* Vol. XLII.

‡ Dr. Talbot, Trans. World's Col. Den. Con., Vol. II.

Exceptional opportunities are offered, in the cosmopolitan practice with which I am associated, to investigate the point at issue, and determine, as far as possible, what happens when the condyle leaves its home in the glenoid fossa for a stationary abode on the articular eminence.

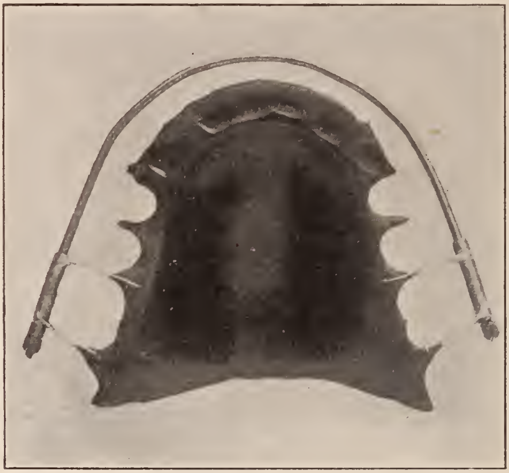

Fig. 1.

The observations I have made in the correction of these asymmetries have been exceedingly interesting, and have not only convinced me that the appliances generally used in this operation are so lacking in scientific accuracy that the physiological changes produced do not hold the condyles permanently in an advanced position, but have also led to the adoption of a new method of jumping the bite, which, together with such anatomical data as I have been able thus far to ascertain, I take pleasure in presenting to this society.

The arrested development of the inferior maxillary is accompanied by a malocclusion of the teeth belonging to Class II of the Angle classification. The relative mesio-distal relations of the jaws and dental arches are abnormal. All the lower teeth occlude more or less distally to normal occlusion and produce a very marked inharmony in the incisive region and in the facial lines. The first division of this class is characterized by more or less narrowing of the upper arch and lengthening and protruding of the upper incisors, Cases II, VI, VII and VIII, accompanied by abnormal functions of the lips and some form of nasal obstruction and mouth breathing, Case VIII, Fig. 4. The second division is characterized by less narrowing, lingual inclination of the upper incisors and more or less bunching of same, Cases I, III, IV and V, associated with normal nasal and lip functions, Cases I, Fig. 4; III, Fig. 3; IV, Fig. 4; V, Fig. 3.

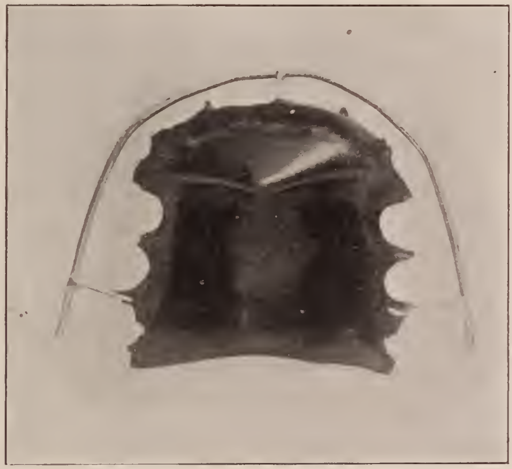

Fig. 2.

The occlusal plane, or, more properly speaking, the occlusal curve, is also abnormal. Invariably the incisive edge of the lower incisors impinge upon the linguo-gingival incline of the uppers, or upon the mucous membrane of the roof of the mouth.

The correction of these accompanying malocclusions necessitates an operation prior to that of jumping the bite. Subsequent to the preliminary operation of establishing normal arches which will later admit of normal occlusion when the lower jaw is closed forward, Case VIII, Fig. 2, it is my plan to correct the plane of occlusion by inserting a vulcanite bite-plate, Fig. 1.*

This plate is provided with a labial bow which serves as a retainer for the upper arch, and is thickened in front to receive the impact of the inferior incisors and to relieve the back teeth from forcible occlusion. It operates by depressing the inferior incisors in their alveoli and permitting the bicuspids and molars to elongate, thus establishing a perfect plane of occlusion. The efficiency of this

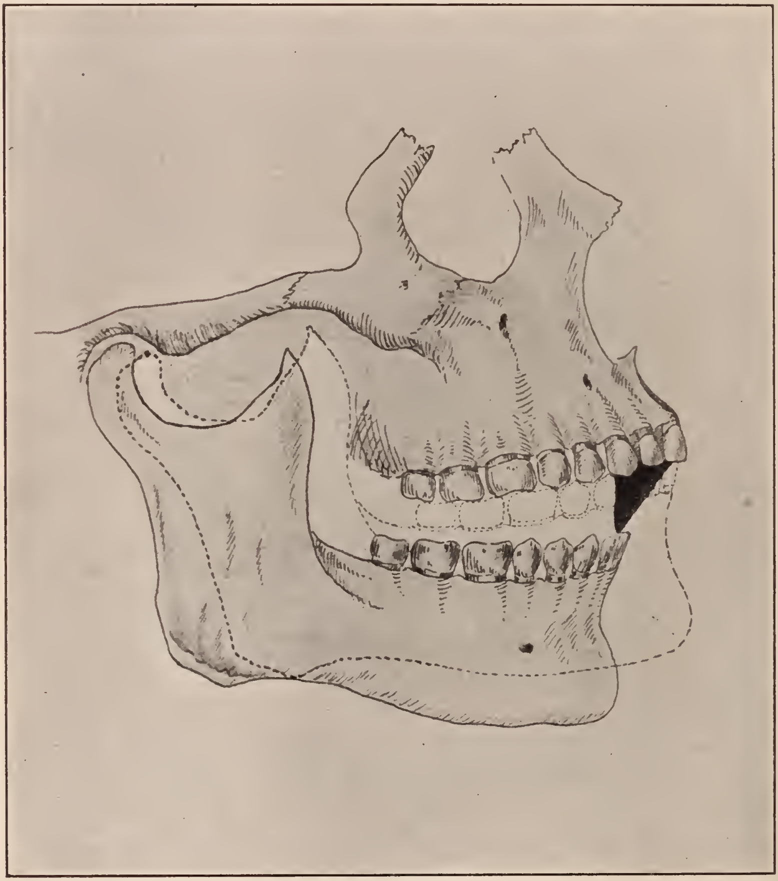

Fig. 3.

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* This is a modified form of a plate introduced, I believe, by Dr. C. S. Case. *Dental Review*, 1892.

plate can be observed by comparing the occlusal plane of the various cases represented, before and after treatment.

The appliance that has been generally employed in jumping the bite is not unlike the original designed by Dr. Kingsley many years ago. The operation comprises "placing an incline plane upon the upper jaw and within the arch, in such a position that the lower jaw antagonizing with it would slide forward to its proper forward position."[†]

The jump-bite-plate I formerly used was a duplicate of the bite-plate with an incline plane which extended downward and backward sufficiently far to catch the lower incisor in every masticating closure of the lower jaw, Fig. 2.

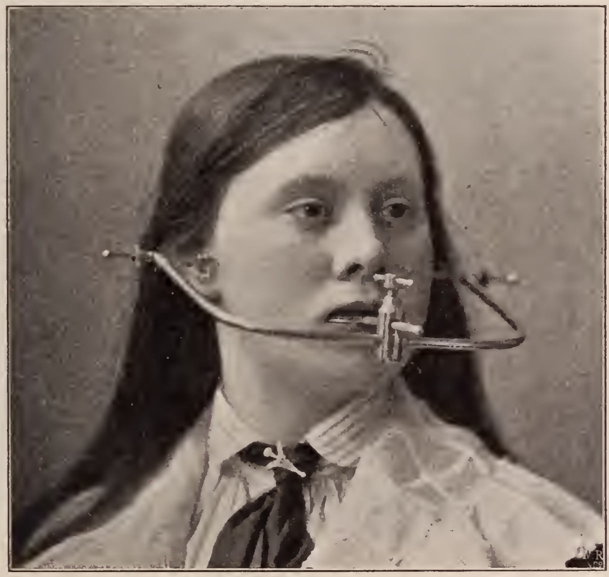

Fig. 4.

From experience with seventeen different plates in which the angle formed by the plane of occlusion and incline plane of the plate varied from 29° to 62°, it was found that an angle of about 45° was necessary to prevent, in some cases, the plate serving more or less as a bite-plate.

The extreme depth of the incline caused little, if any, inconvenience to the patient, for, although the incline plane occupied a considerable space, the oral cavity, as compared with its former size, was but slightly diminished. A plate so constructed served as a retainer for the plane of occlusion and the upper arch, and also forced the lower jaw in closing to normally occlude with the upper.

[†] Dr. Ottolengui, *Dental Cosmos*, Vol. XLII.

I have performed the operation of jumping the bite sixteen times and in eleven cases simultaneously under treatment I attempted to permanently establish the lower jaw in its forward position by the jump-bite plates. These plates were worn constantly, varying from four to sixteen months, and in every case I failed to produce the slightest anatomical change in the temporo-maxillary articulation or any part of the inferior maxillary, as can be seen by comparing the natural occlusion of the jaws as represented in Cases I, Figs. 1 and 2; II, Figs. 2 and 3; VI, Figs. 1 and 2.

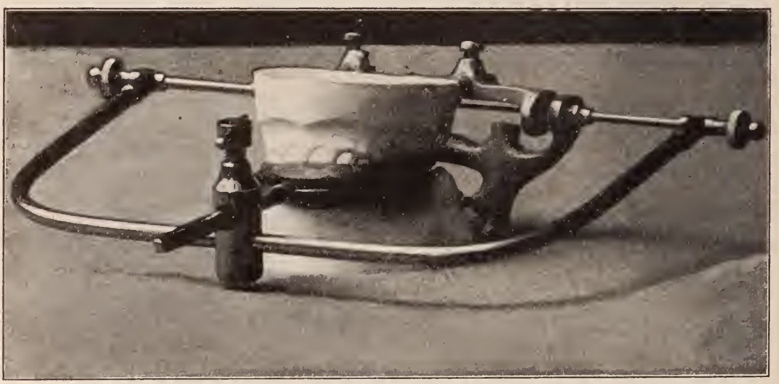

Fig. 5.

However, after the plates had been worn a few months, *the patients had acquired the habit to bite forward, in masticating closure of the jaw, to the normally arranged occlusion;* but when the muscles were relaxed the condyles would return to their natural position in the glenoid fossæ. So far as occlusion was concerned the Kingsley plate had formed the habit to jump the bite in every case, but from an aesthetic standpoint, when the jaw was in repose as well as occlusion, I was endeavoring to stationarily hold the jaw in a forward pose, and these adverse experiences naturally prompted the question, if it is possible to produce a physiological change the result of which will permanently retain the condyles in an advanced position, wherein is the Kingsley plate lacking in efficiency?

The accompanying drawing, Fig. 3, graphically represents the relationship existing between the movements of the condyle in the condylar path and the lower incisors on the incline of the plate during the opening and closing excursions of the lower jaw. In closing the jaw the incisors antagonizing with the incline slide forward and upward to normal occlusion, while the condyle moves downward and forward on the articular eminence; and when the jaw is opened exactly the reverse excursion is made. Instead of holding the jaw in a fixed forward position the jump-bite-plate establishes its extremities on two incline planes operating in opposite directions, and creates a latitude of instability in the temporo-maxillary articulation equal to the distance that the condyle is forced forward and downward on the articular eminence.

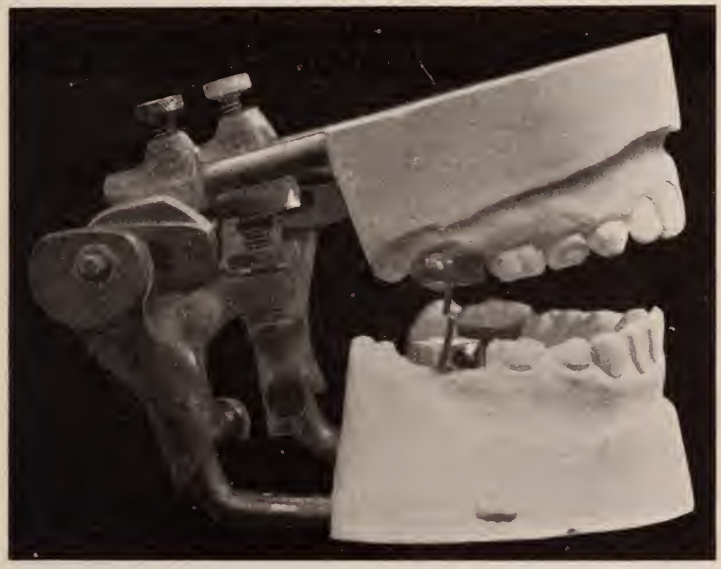

Fig. 6.

An adverse argument has been presented as to the possibility of jumping the bite by relating a case in which the patient, "in closing his teeth naturally, shut together the cutting edge of the incisors, and in doing so the articulating surfaces of the bicuspids and molars lacked about one-eighth of an inch of touching. In order to masticate he protruded the lower jaw, so that the inferior incisors closed outside of the superiors, and that was his normal articulation for use. The patient was thirty years old," and it was argued that "if the bite could be jumped it would have been jumped in this case, where there was every reason for him to close in front all the time, and he did so whenever he masticated. He had not accomplished a permanent jumping of the bite."*

A gentleman brought Case IV to me with the inquiry: "Why does my son not close his mouth like other children? When he closes the teeth in mastication he moves the entire jaw forward, but it falls back again." The former case closes forward by necessity and the latter by habit, but in both cases the instability of the condyles in the glenoid fossæ is not unlike that produced by the jump-bite-plate.

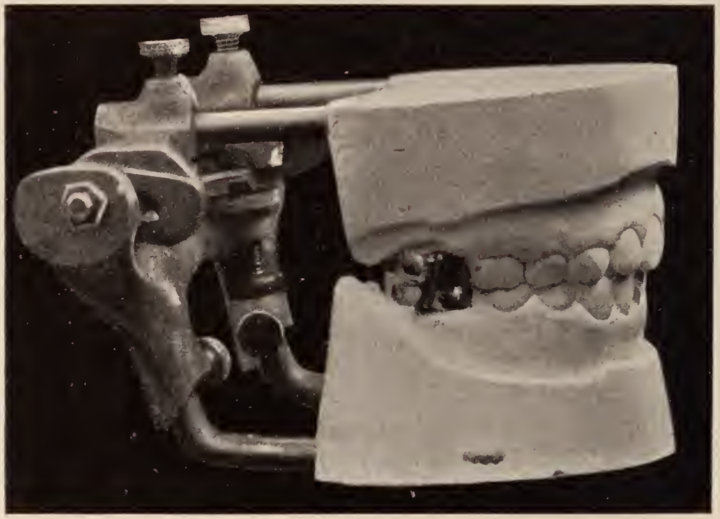

Fig. 7.

Fortunately, in the Royal Museum in Dresden, I found two skulls which, in age and character of occlusion, corresponded in every detail to the cases mentioned above. In both subjects the glenoid cavities presented a flattened surface extending anteriorly and downward the distance the condyles were forced forward and downward in masticating occlusion of the jaws. These observations are indirectly corroborated by the statement of Mr. Tomes, that "the form of the glenoid cavity bears an intimate relation to the dentition of the animal, and *the nature and extent of the movement of its jaws.*"†

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* Trans. World's Col. Dent. Cong., Vol II.

If it were possible to acquire the habit whereby the jaw could be held in a fixed forward position, the jump-bite-plate would meet every requisite to accomplish the operation, but from a study of the action of the masticatory muscles such a consideration is quite out of the question.

"The closure of the jaw, and the rotatory and oblique motions, are accompanied by four pairs of very powerful muscles; these are antagonized by muscles comparatively feeble and indirect in their application.

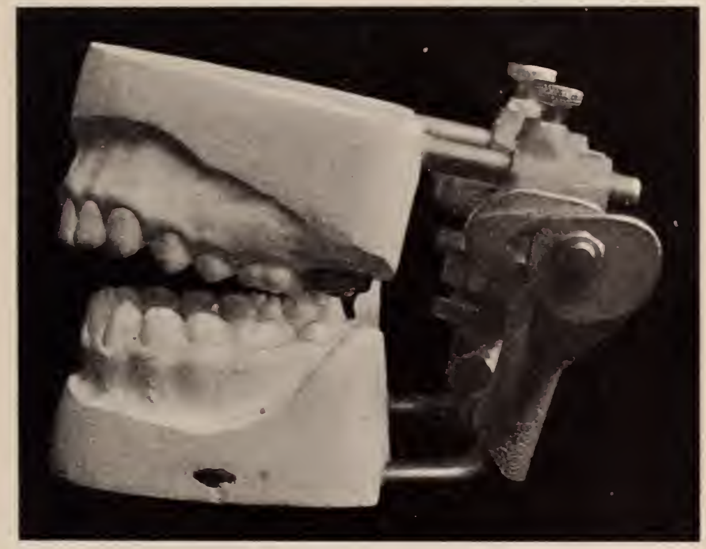

Fig. 8.

"The closure of the jaw is effected by the masseters and the temporals, attached to the outer side of the jaws; and the external and internal pterygoids, attached to its inner sides.

"The masseter, temporal and internal pterygoid muscles close the jaw and press the teeth against one another, and this is their principal action. They are antagonized by the digastric, the mylohyoid and geniohyoid muscles, which, aided perhaps by the platysma, depress the lower jaw when the hyoid bone is fixed by its own depressor muscles.

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† Tomes' Dental Anatomy, p. 557.

"The external pterygoid draws the jaw forward, and so, in some measure, tends to open it; as the two muscles do not always, or, indeed, generally, act together, they give a lateral movement to the jaw. The superficial portions of the masseter and the internal pterygoid are ordinarily supposed, as their direction is slightly backward, to assist in drawing the jaw forward; but Langer, a recent investigator of their action, attaches very little importance to this, and, indeed, considers that, when the jaw has been pulled forward by the external pterygoid, the combined action of the internal pterygoid, the temporal and the masseter may bring it back again. . . .

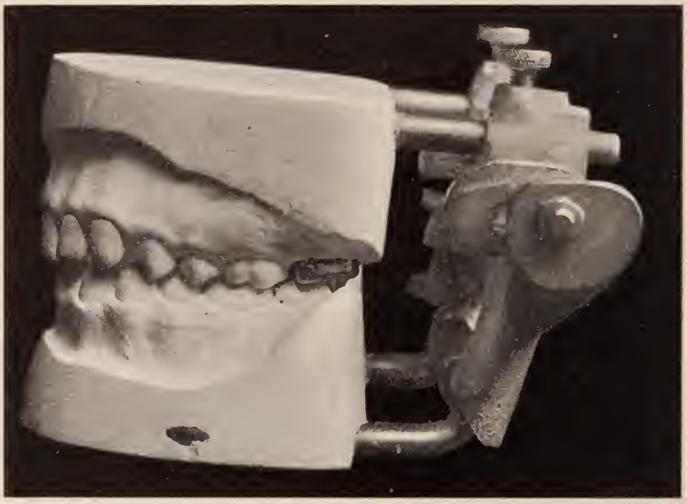

Fig. 9.

"The position of repose is neither complete closure nor opening of the jaws; in persons with enlarged tonsils the habitual position is one with the mouth somewhat more widely open, owing to the difficulty in breathing through the nose."*

I have found the resistance necessary to retain the lower jaw 5 mm. in a forward pose, when all the muscles are relaxed, varies from 30 to 60 grams. This amount, though comparatively small, is sufficiently great to render it absolutely impossible for the external pterygoid to hold the jaw in a fixed forward position.

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*Dental Anatomy, Tomes.

The natural tendency of the muscles is to retain the condyles in their natural position in the glenoid fossæ. The incline plane of the Kingsley plate, when the jaw is in repose, offers no resistance to this natural tendency on the part of the muscles; and the consequent backward and forward movement of the condyle from its natural position in the fossæ to that on the articular eminence where it is forced by the advancement of the jaw, in masticating closure, would prevent the production of the physiological changes necessary to establish a new temporo-maxillary articulation. It is probable that the physiological result is a permanent enlargement of the glenoid cavity anteriorly and downward. The possibility of bending the neck of the condyle is highly improbable for the following reasons:

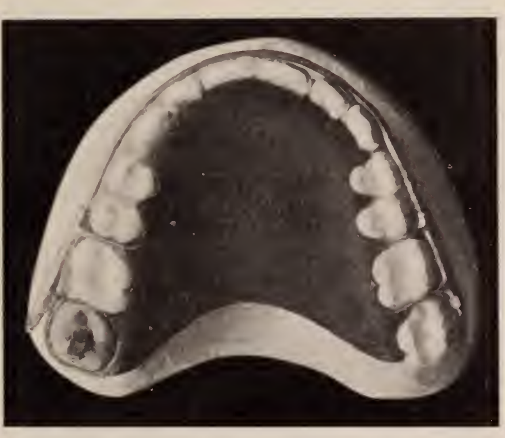


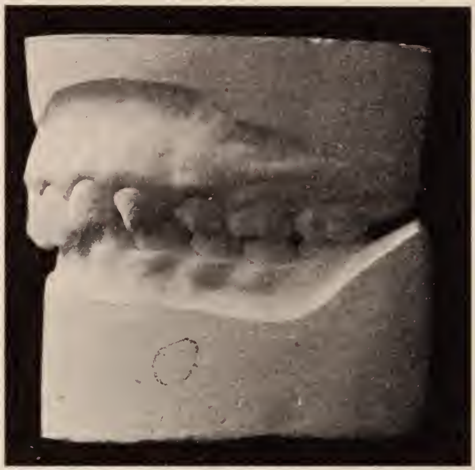
Fig. 10.

1st. The constant force is not sufficient.

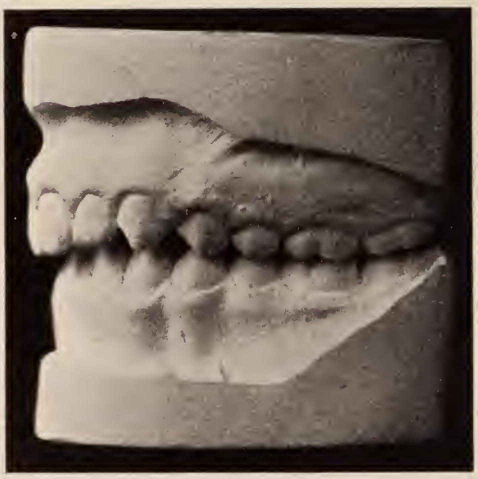
2d. The period of activity of the masticatory muscles as compared with the period of rest is too short.

3d. Observations mentioned above (in reference to the form of the glenoid cavity being dependent upon the occlusion of the teeth) and observations stated later.

It was at the termination of two years' experimenting with various forms of plates, endeavoring to establish a positive temporo-maxillary articulation, that I conceived the idea of a simple method of jumping the bite, which, while giving the lower jaw the necessary freedom to perform every function unconscious of its subjection, prevents the condyles from resuming their former position in the fossæ. It also accurately records the position of the condyle in its relation to the newly established articulation at the date of the beginning of the operation. Scientifically this record is of the utmost



Case I. Fig. 1.



Case I. Fig. 2.

value, for if at the end of the operation one knows the location of the condyle at the beginning, he is enabled to determine the *nature* of the subsequent physiological changes produced in the osseous parts involved, and is endowed with the knowledge to somewhat enlighten the profession as to Nature's role in the most important operation in orthodontia.

The method is based upon the principle that there must be an obstruction, operating continuously, during the ordinary opening and closing excursions of the lower jaw in order to prevent the condyles from taking a more posterior position in the glenoid cavities. The construction of the appliance necessitates the models being placed in an articulator, in such a position that these excursions are approximately duplicated. This accurate adjustment of the models is accomplished with a great degree of certainty by the Snow face bow, Fig. 4, and the Gritman articulator, Fig. 5.

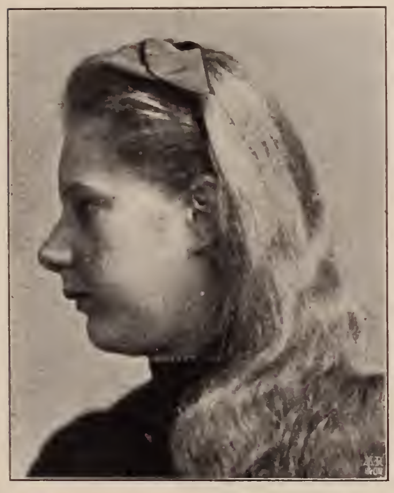
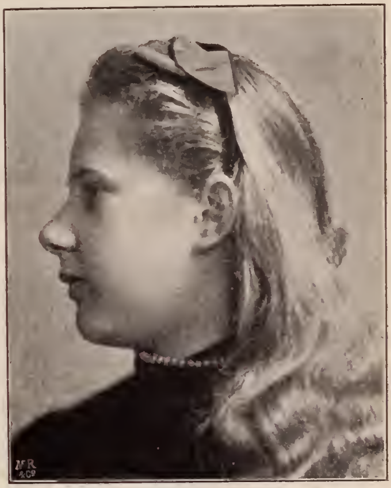
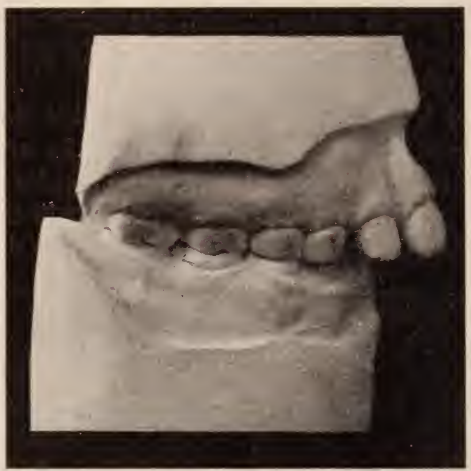
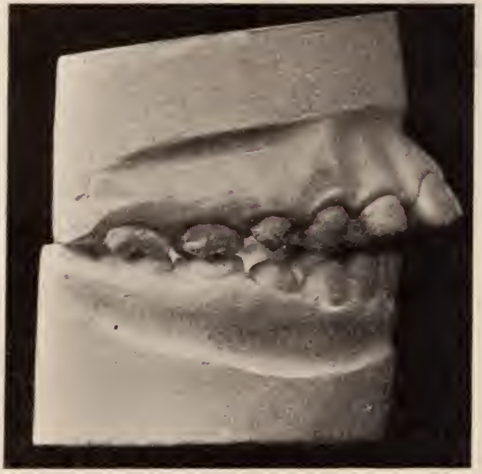



Fig. 4. Case I. Fig. 5.

Prior to the introduction of these instruments I established these anatomical relations in an ordinary articulator by a similar face bow constructed for the purpose. The location of the condyle, in its new articulation on the articulator eminence, is found by instructing the patient to move the lower jaw forward to normal occlusion and indicating the position of the external articulator surface of the condyle on the face. When the condyle occupies its advanced position the point of a blue pencil will drop into the depression between the head of the condyle and the posterior part of the glenoid cavity, and by this landmark the operator, by a little experience, can locate the head of the condyle with great accuracy.

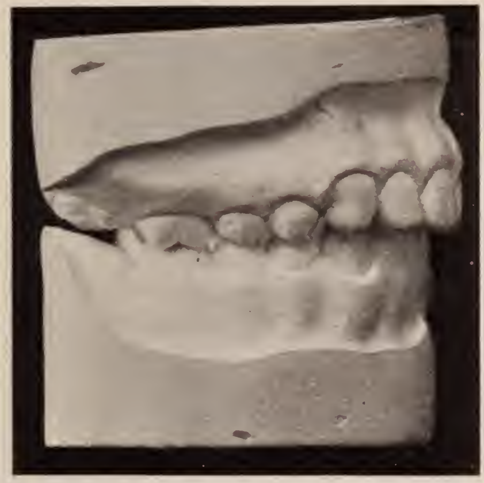


Case II. Fig. 1.

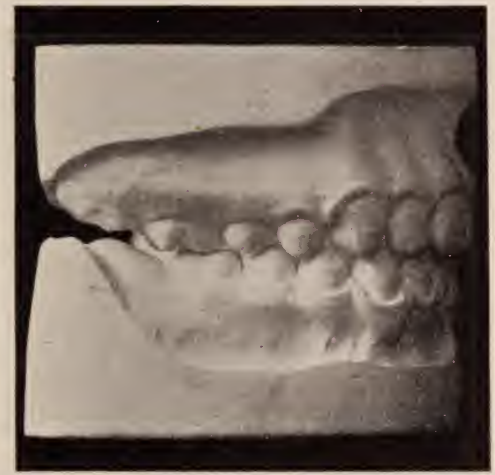


Case II. Fig. 2.

To provide for more delicate placement of the index rods of the face bow, short wooden points are inserted, during the adjustment, in the depression made to receive the joint bolts of the articulator. A composition bite is taken with the teeth in normal occlusion and

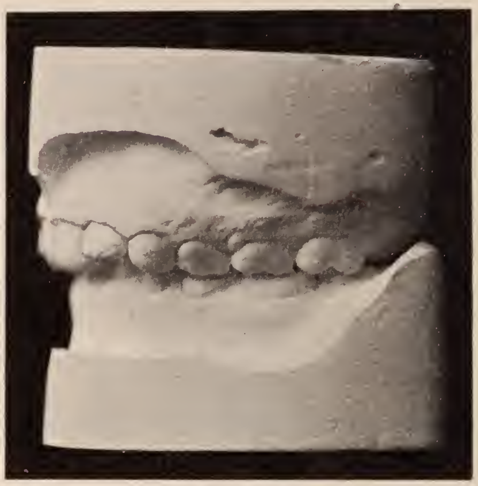


Case II. Fig. 3.

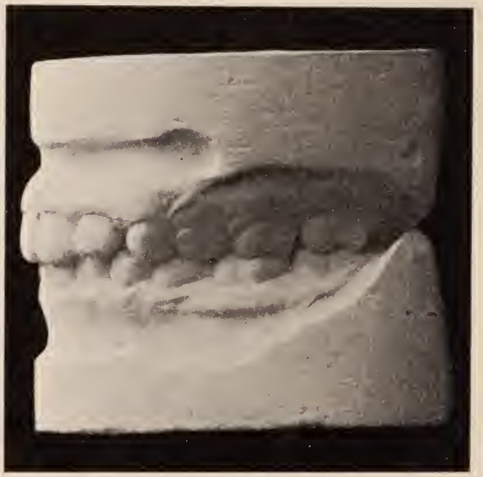


Case II. Fig. 4.

to which bite the semicircular fork of the face bow is firmly attached, so that when in the mouth the stem will project horizontally between the lips in the median line. The universal joint of the face bow is slipped on the stem and the wooden points of the index rods are placed over the indicating articulation. The universal joint is tightened and the apparatus, with the models inserted in the bite, is transferred to the articulator. The index rods engage the joint bolts of the articulator, and *the models when fastened to the articulator will occupy the same relative position to the articulator joint as the dental arches do to the new temporo-maxillary articulation.*



Case III. Fig. 1.



Case III. Fig. 2.

A recent observer* has found that the center of motion of the lower jaw is located a short distance vertically beneath the glenoid cavity, but for practical purposes it is sufficiently accurate to consider the position of its axis in the new temporo-maxillary articulation. This being granted the ordinary opening and closing excursions of the models in the articulator are anatomically correct.

The manipulative construction of my appliance consisted in geometrically adjusting two bars in such a position that they form a portion of a circle, the center of which is the articulator joint; one of which bars, extending downward, is attached to the buccal surface of a band on an upper molar and operates posteriorly to the other, which, extending upward, is attached to a band on the lower molar, Figs. 6 and 7.

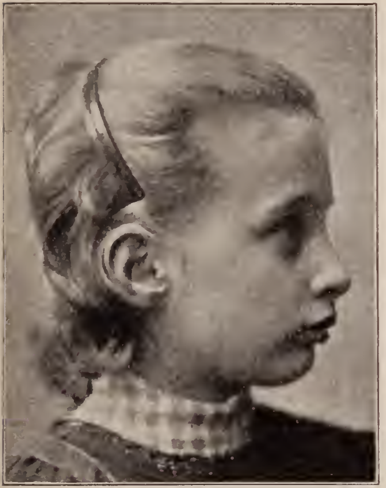


Fig. 3.

Case III.

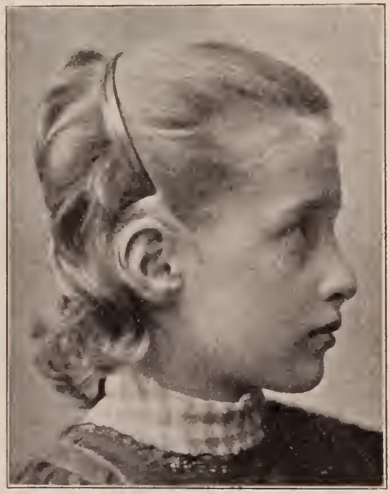


Fig. 4.

The difficulty experienced in rigidly retaining the teeth to which the bands were attached led to the adoption of a modification of this appliance which is less complicated and more practical, yet it involves the same principle.

Instead of two bars operating buccally, one bar which forms a portion of a circle, the center of which is the articulator joint, is attached to the occlusal surface of a gold crown and operates on the approximal surface of an occluding molar, Figs. 8 and 9. This appliance is universal and its adjustment either superiorly or inferiorly or both is governed by the eruptive stage of the teeth or

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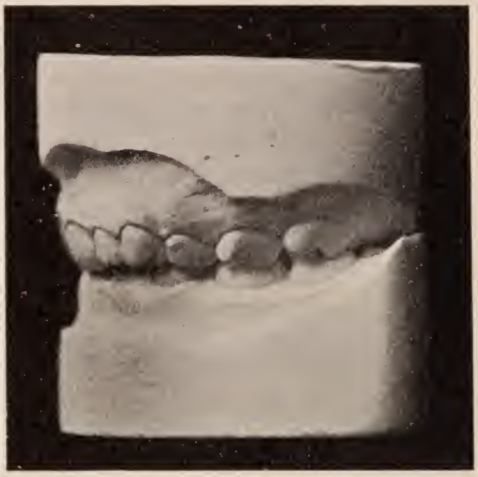
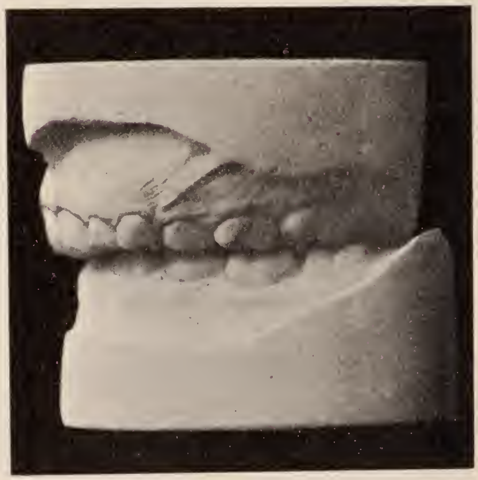
*T. E. Constant, Journal of the British Dental Association, 1900.



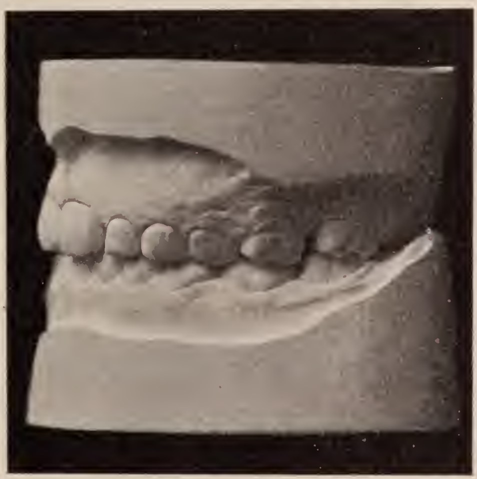
Case IV. Fig. 1.



Case IV. Fig. 2.

loss of same by extraction. However, it is advisable when conditions will admit to place the device on the last upper molar with the jump-bite-bar operating on the distal surface of the last lower molar. The soft tissues posterior to the last lower molar must be pressed back sufficiently to permit the jump-bite-bar to operate.

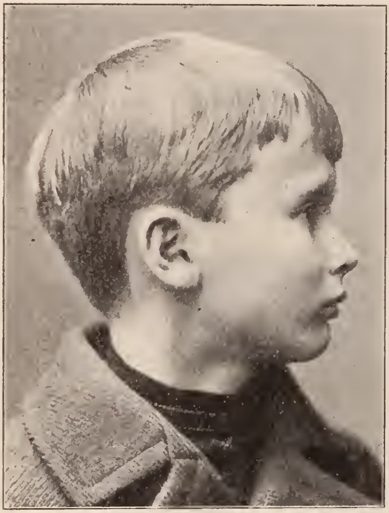
One of the chief difficulties of my experience has been the establishment of an immovable anchorage. This obstacle was overcome by the retention of the former bite-plate with an additional broad clamp extending around the distal surface of the anchor tooth. The labial bow of the plate is attached to the buccal surface of the clamp, Fig. 10. This plate, continuing to operate as a retainer for the upper arch and plane of occlusion, forms a compound anchorage in which the whole upper arch participates in preventing a backward displacement of the anchor tooth. The pressure anteriorly exerted by the jump-bite-bar is resisted by the entire lower arch, thus the complete anchorage is the strongest that possibly can be produced. Should there be a tooth unerupted or missing in the lower arch the space must be prevented from closing.



Case IV. Fig. 3.

The effectiveness of this bar appliance is the same, if the plane of occlusion is preserved, whether operating on one or both sides; but, without exception, it is of the greatest importance that the appliance be adjusted on the last molar, and the bar be as long as conditions will admit, Figs. 8 and 9, for it is obvious that these two essentials determine the extent the jaw can be opened without allowing any change in the position of the condyle in its relation to the glenoid cavity. When the jaw is opened beyond the influence of the jump-bite-bar the condyle, no longer under control, can resume a posterior position in the cavity, but the character of the occlusion is so uncomfortable and the expression of the face so stupid it is an act of infrequent indulgence, and when performed is deliberate and voluntary on the part of the patient.

This method completely meets every requirement for establishing a fixed temporo-maxillary articulation in an advanced position, and, as stated, allows the lower jaw the necessary freedom to perform every function unconscious of its subjection.



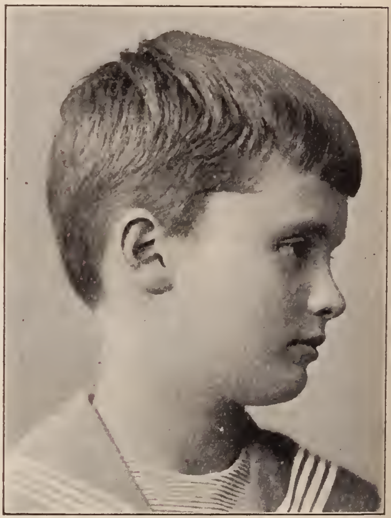


Fig. 4. Case IV. Fig. 5.

A study of the models and the photographs of the ten cases represented (eight of which are reproduced) will sufficiently acquaint you with the method explained in the general description without presenting the details of each case, excepting Cases VI and VII, which will be considered later.

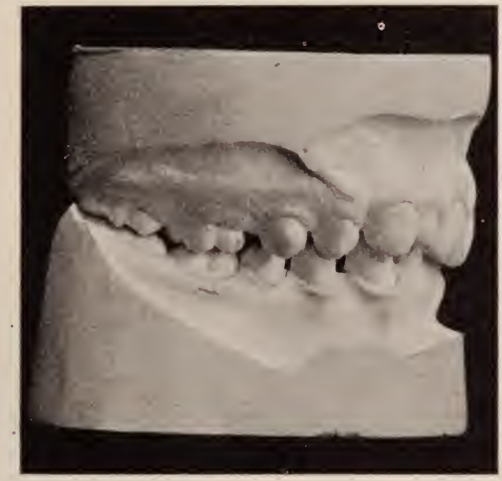
Case I.—Stefanie F. Age 11.

Fig. 1. The occlusion before treatment.

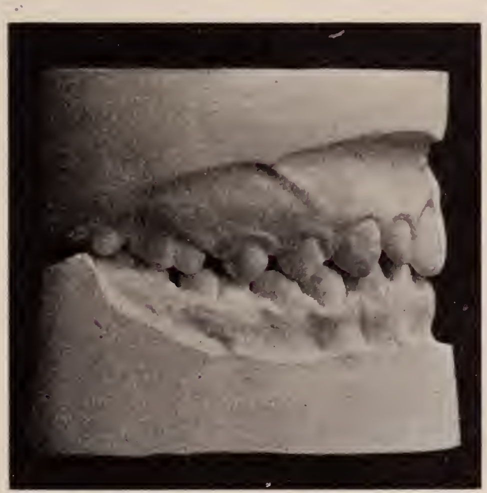
Fig. 2. The Kingsley plate had been worn eight months subsequent to the preliminary operation of establishing symmetrical arches and correcting the occlusal plane. The plate had produced no change in the relative position of the lower jaw, as shown by the natural occlusion in Figs. 1 and 2.

Fig. 3. The normal occlusion after treatment. (See Fig. 9.)

Fig. 4. Shows the inharmony of the facial lines when the lower jaw was in its natural position.



Case V. Fig. 1.



Case V. Fig. 2.

Fig. 5. Shows the improvement in the facial lines by advancing the lower jaw to normal occlusion of the teeth. These photographs were taken just before the bar appliance was adjusted

Case II.—Maria F. Age 10.

Fig. 1. The occlusion before treatment.

Fig. 2. Represents the occlusion when the case came to me. The great change in the occlusal plane from that shown in Fig. 1 was produced by a bite-plate, which had been worn for eight or nine months. I believe additions were made to the occlusal portion of the plate from time to time, as the back teeth came together.

Fig. 3. The Kingsley plate had been worn in this case for sixteen months subsequent to the preliminary operations and there was no change in the relation of the lower jaw, as shown by the natural occlusion in Figs. 2 and 3.

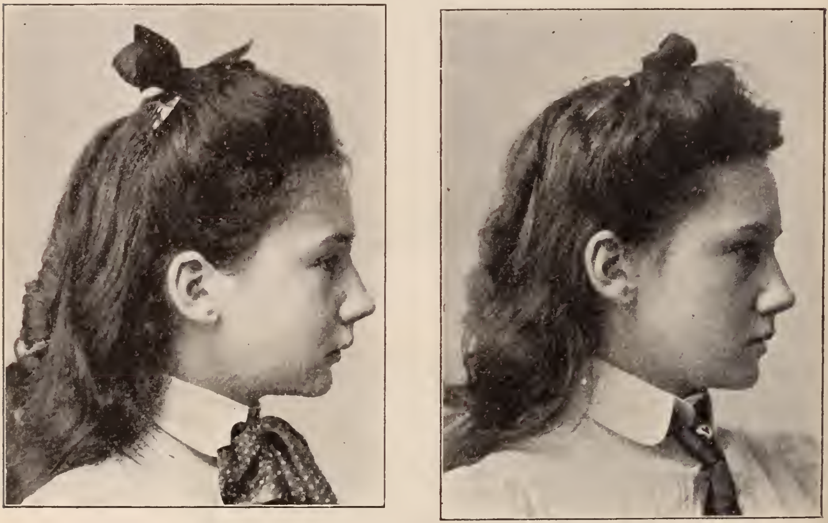


Fig. 3. Case V. Fig. 4.

Fig. 4. The normal occlusion after treatment.

Case III.—Hildegard B. Age 11.

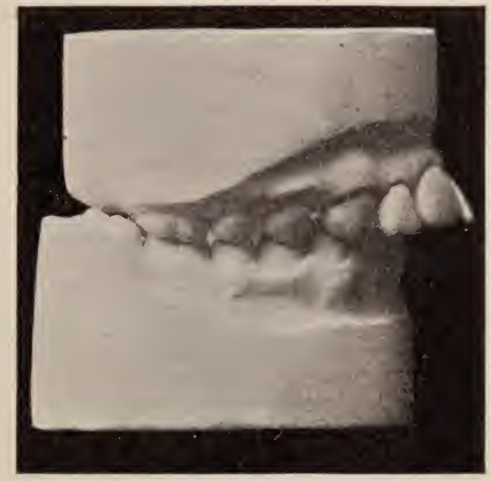
Fig. 1. The occlusion before treatment.

Fig. 2. The normal occlusion after treatment. The anterior portion of the upper arch was expanded sufficiently to allow the lower arch to normally occlude with the upper.

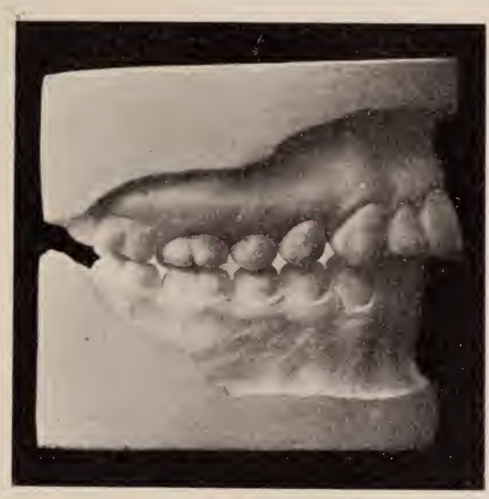
Fig. 3. Shows inharmony of facial line when the jaw was in its natural position.

Fig. 4. Shows the esthetic improvement in the facial lines by

advancing the lower jaw to normal occlusion of the teeth. These photographs were taken just before the bar appliance was adjusted.



Case VI. Fig. 1.



Case VI. Fig. 2.

Case IV.—Gunther B. Age 9.

Fig. 1. The masticating occlusion before treatment.

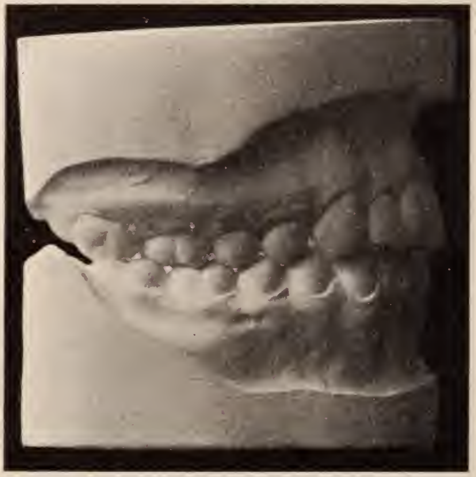
Fig. 2. The natural occlusion before treatment. This case when

presented was advancing the jaw in masticating closure about 3 mm., as shown by comparing Figs. 1 and 2.

Fig. 3. The normal occlusion after treatment. The anterior portion of the upper arch was expanded sufficiently to allow a normal occlusion of the teeth.

Fig. 4. Shows the inharmony of the facial lines, when the lower jaw was in its natural position before treatment.

Fig. 5. Shows the improvement in the facial lines after treatment.



Case VI. Fig. 3.

Case V.—Princess Louisa v. Th. u. T. Age 14.

Fig. 1. The occlusion before treatment. This case was complicated by the loss of the left inferior central incisor by an accident. The spaces between the inferior incisors were equalized and the anterior portion of the inferior arch contracted, and the anterior portion of the superior arch expanded sufficiently to permit a normal occlusion of the teeth.

Fig. 2. The normal occlusion after treatment.

Fig. 3. Shows the lack of perfect harmony in the facial lines before treatment.

Fig. 4. Shows the gratifying improvement in the facial lines after treatment.

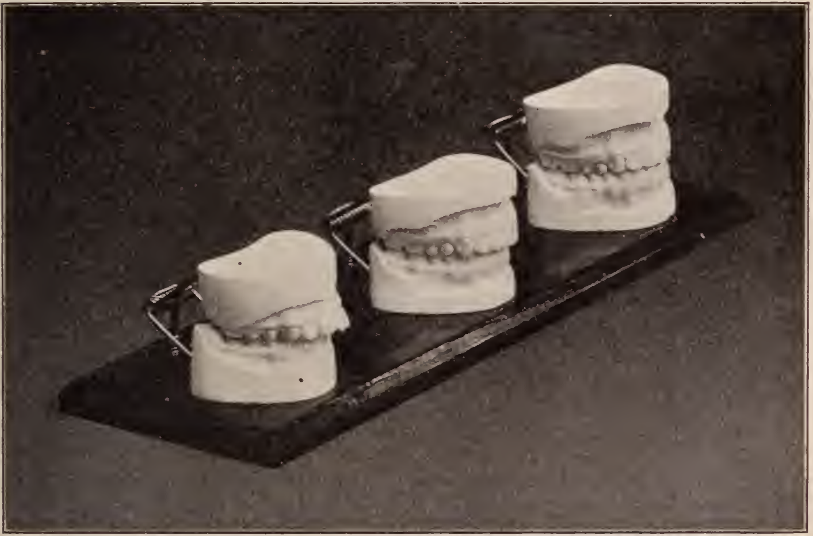
Case VI.—Eva O. Age 15.

Fig. 1. The occlusion before treatment.

Fig. 2. The Kingsley plate has been worn for seven months subsequent to the symmetrical arrangement of the arches. There was no change in the relation of the jaws, as shown by the occlusion in Figs. 1 and 2.

Fig. 3. Normal occlusion after treatment.

Fig. 4. Illustrates the writer's method of mounting the models of each case for exhibiting purposes. The models are attached to the wooden base by a screw, to the top of which is fastened a spring clamp which engages the hinge of the wire articulator. By this means of attachment the models of each case do not become separated while being exhibited, yet they can be readily removed from the wooden base by detaching the hinge of the wire articulator from the spring clamp of the screw. This is a practical and convenient way of exhibiting a number of cases.



Case VI. Fig. 4.

Case VII.—Mathilde v. St. Age 15.

Figs. 1 and 2. The occlusion before treatment.

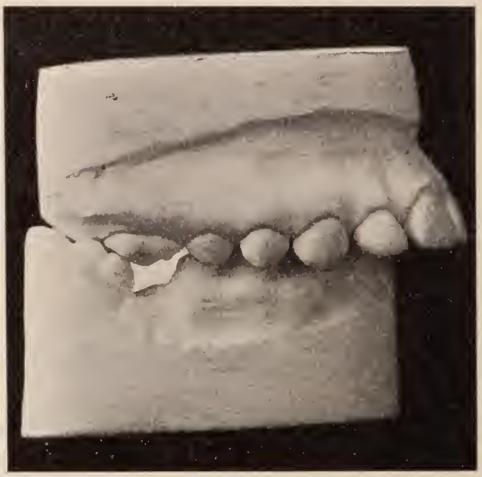
Figs. 3 and 4. The occlusion when the bar appliance was adjusted.

Figs. 5 and 6. The occlusion eight and one-half months later.

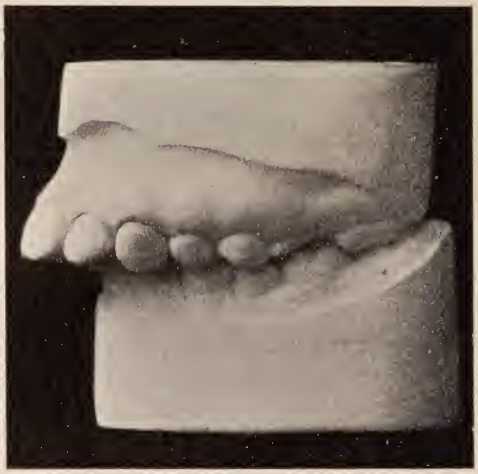
Case VIII.—Erich G. Age 9.

Fig. 1. The occlusion before treatment.

Fig. 2. The arches have been symmetrically arranged so that when the lower jaw is brought forward, as shown in this illustration, they will admit a normal occlusion of the teeth after the occlusal plane has been corrected.



Case VII. Fig. 1.



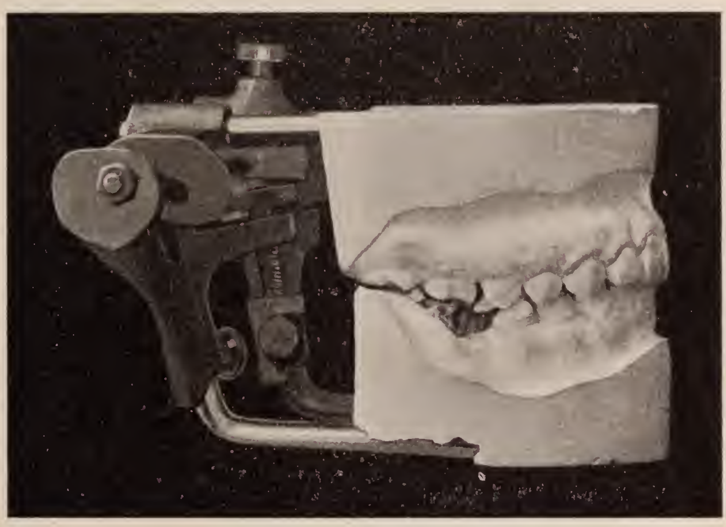
Case VII. Fig. 2.

Fig. 3. The normal occlusion after treatment.

Fig. 4. Shows the imperfection in the esthetic contour of the features before treatment.

Fig. 5. Shows the facial expression after treatment.

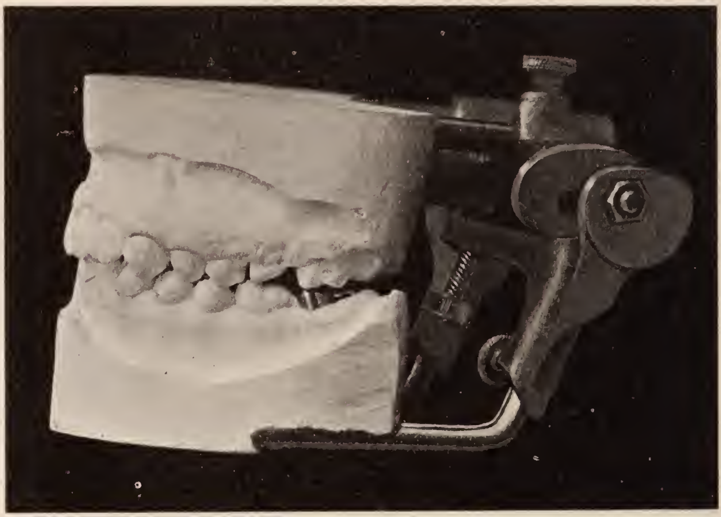
In every operation I have exercised the closest observation endeavoring to satisfactorily determine the nature of the physiological changes that are caused by the subjective influence of the jump-bite-bar; and my investigations, though yet incomplete, have been sufficiently adequate to somewhat enlighten the existing element of doubt as to what compensating adjustment takes place in the temporo-maxillary articulation, when the lower jaw is fixed in an advanced position.



Case VII. Fig 3.

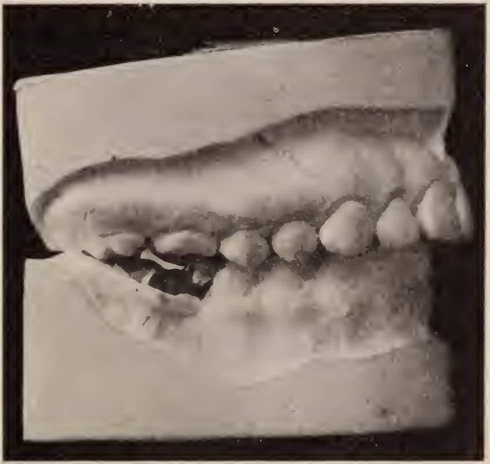
All cases that I have treated have given evidence that a physiological change was taking place somewhere a few weeks after the adjustment of the bar appliance. The result of this change was manifest, when the jaw was opened beyond the influence of the jump-bite-bar and the condyles allowed to occupy their most posterior position in the glenoid cavities by the relative position of the lower jaw, as indicated by the end of the bar on the occlusal surface of the occluding molar, gradually advancing from one-half to two mm. per month, *until the jaw could not be closed distally to normal* *occlusion.* The rapidity of this physiological change is dependent upon the age and physical conditions of the patient.

If the manipulated procedure of reproducing the anatomical relations of the dental arches to the condyles in the articulator has been accurately accomplished at the beginning of the treatment and no displacement of the teeth has occurred, the reserve procedure, when the operation is completed, of first adjusting the face bow on the articulator and then transferring the apparatus to the patient, will tell whether the condyles occupy the same position in their relation to the glenoid fossæ as they did when the record was formerly made. The original bite should be preserved for this final purpose and the wooden points should be inserted in the ends of the index rods and their position marked on the face. This record indicates the exact position of the condyles at the commencement of the operation. When the treatment is finished a careful examination of the position of the condyles, when occupying their normal position in the fossæ, will unquestionably reveal what anatomical changes have taken place. I have found in all cases, where there was no displacement of the anchorage, and the occlusal plane remained unchanged, that *the antero-posterior position of the condyles in their relation to the glenoid fossæ remained stationary,* but

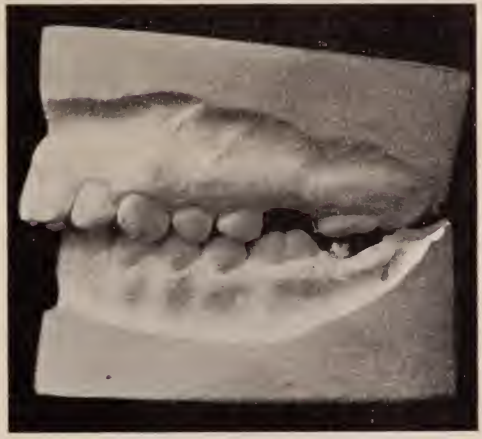


Case VII. Fig. 4.

invariably their infero-superior position was slightly above that indicated by the record. The latter position could not be determined so accurately as the former. *Backward pressure, applied at the*



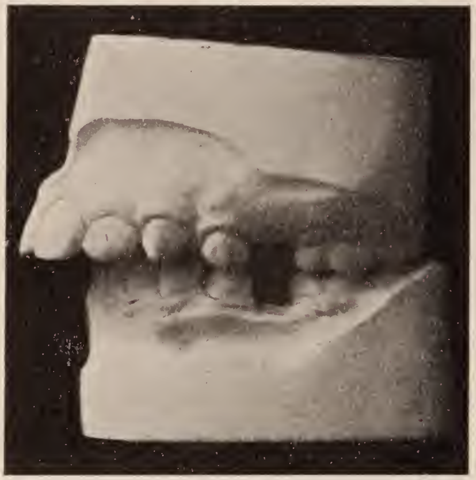
Case VII. Fig. 5.



Case VII. Fig. 6.

symphysis during the operation, caused pain in the temporo-maxillary articulation, which was probably due to the yielding properties of newly formed tissue. Examination of the parts involved, when the jaw was distended as far as possible, disclosed the fact that the tenderness was located in the posterior part of the glenoid fossæ and not associated with the condyles.

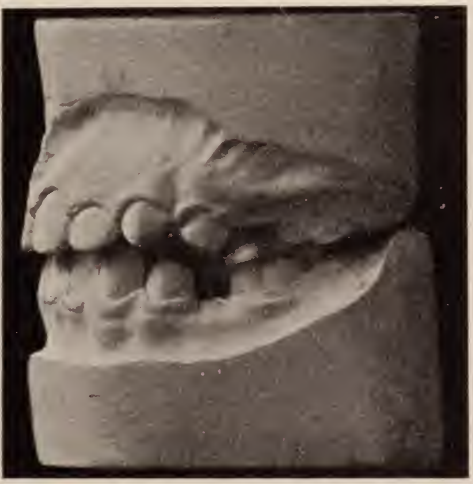
Still more conclusive evidence as to the nature of these physiological changes is found in the history of Cases VI and VII. In Case VI the lower jaw was moved forward 4.5 mm. From want of proper reinforcement the anchorage was displaced 2 mm., which necessitated the removal of the appliance four months subsequent to its adjustment; and the lower jaw could not take a more posterior position than 2.5 mm. in advance of the position it occupied before the commencement of the operation.



Case VIII. Fig. 1.

If absorption and deposition of tissue has taken place in the glenoid cavity, as my observations indicate, the removal of the appliance and relieving the back teeth from forcible occlusion by a slight addition to the anterior part of the bite-plate ought to produce an absorption of the old socket, allowing the jaw to return to its previous backward position. Such an experiment was tried in Case VI. *In six weeks the lower jaw had moved backward 2.5 mm. and occupied its former position in relation to the occlusion of the teeth.* Certainly in this case there was no bending of the neck of the condyle or any part of the lower jaw for the force—the muscles—necessary to produce such a change in the first instance continued to operate with the same degree of intensity and would have prevented the rebending of the neck of the condyle. Consequently there would have been no backward movement of the lower jaw.

The jump-bite-bar, properly reinforced, was readjusted and the physiological changes in the glenoid cavity required two and one-half months to produce such results as to permanently hold the lower jaw in the advanced position. In other words the filling in process in the glenoid cavity progressed at the rate of 2 mm. per month.



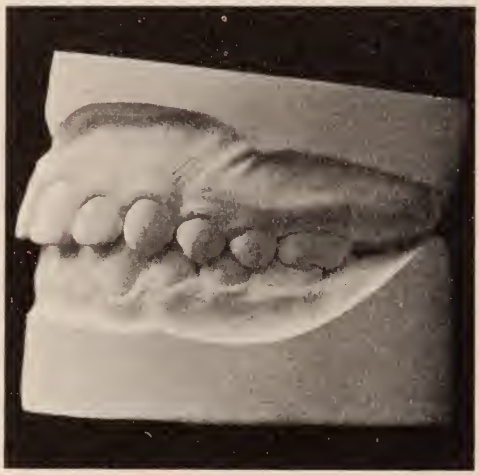
Case VIII. Fig. 2.

Case VII presents some interesting details. The patient, a young lady fifteen years of age, residing a great distance from Dresden, made only four short visits during the entire operation. The preliminary work of correcting the superior protrusion was successfully carried on at the patient's home, and subsequently a jump-bite-plate was made, which in this case also served to correct the plane of occlusion.

At the time of the third visit the plate had been worn for nine months and the plane of occlusion had been established five or six months.

This was my initial case of using the method described in this article. The jump-bite-bars were attached to crowns on the second inferior molars and operated mesially to the second superior molars.

The patient was about to enter a boarding school and most seriously objected to wearing any appliance. I reluctantly yielded to her persuasions and she was dismissed without a retainer for the plane of occlusion, with instruction to send me composition bites every fortnight as she formerly did during the correction of the superior protrusion. Seven months elapsed before I succeeded in receiving a bite and the conditions were so peculiar that I insisted upon the return of the patient. Six weeks later she came back and the conditions were as represented in Figs. 5 and 6, Case VII.



Case VIII. Fig. 3.

The length of time the jump-bite-plate had been worn, subsequent to establishing a correct plane of occlusion, had been quite inadequate to prevent the back teeth from being considerably depressed in their alveoli. The depression of the posterior teeth allowed the inferior incisors to occlude on the lingual surface of the superior incisors. The latter were driven outward 2 mm. and the former backward 1 mm.

The occlusion of the left bicuspids and molars was exactly as arranged nine months previously and the jump-bite-bar was operating correctly, Case VII, Figs. 2, 4 and 6. On the right side the second inferior molar had been depressed so far that the jump-bite-bar no longer exerted its influence on that side, and the bicuspids and molars had practically returned to their former occlusion, Case VII, Figs. 1, 3 and 5.

Had I made a bite-plate in connection with the jump-bite-bars the plane of occlusion would have been preserved, and both bars would have operated with the same degree of efficiency; but, on the right side, the entire occlusion and influence of the jump-bite-bar being lost, the condyle returned to its former position in the glenoid fossa, while the left condyle was held stationary in its forward position on the articular eminence. Consequently the jaw was swung entirely to the right; the superior bicuspids and molars also participated in the lateral movement. The jump-bite-bars were removed and the left condyle could not take a more posterior position in the glenoid cavity. Pressure at the symphysis caused a decided pain in the left temporo-maxillary articulation, but the greatest force the patient could endure on the left side produced absolutely no feeling whatsoever in the right temporo-maxillary articulation. The source of the pain was unquestionably in the posterior part of the glenoid cavity. Upon examination of the relative position of the condyles it was found that the left condyle occupied a position about 5 mm. forward and downward from that of the right. These anatomical relations as revealed by the Röntgen

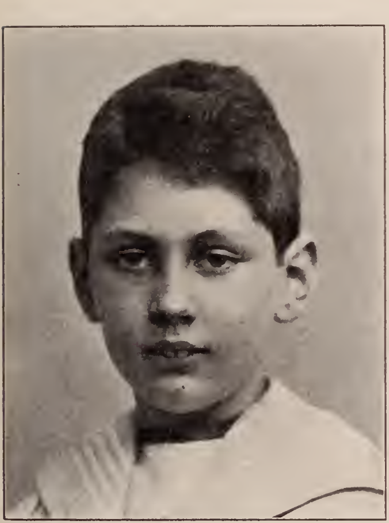


Fig. 4.

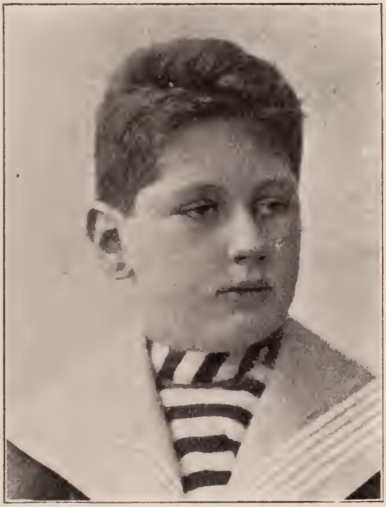


Fig. 5.

Case VIII.

rays are shown by the accompanying radiographs (not reproduced). The density of the osseous tissue through which the rays had to pass prevented an exact representation of the condyles in their relation to the glenoid cavities. However, it is interesting to observe that the portion of the left ramus seen in the radiograph measures 5 mm. longer than the right.

The symmetry of the upper arch was restored, a bite-plate inserted and the patient dismissed. Here as in Case VI the bite-plate established the jaw on either extremity and had there been a bending backward of the neck of the left condyle sufficiently great to stationarily hold the left side of the jaw in its advanced position the continued action of the masticatory muscles would prevent the rebending of the affected bone; but if the condyle was held in its advanced position by a deposition of tissue in the posterior part of the glenoid cavity the existing conditions would cause an absorption of the newly formed tissue, and the condyle would return to its former place in the fossa. *Eight weeks later the lower jaw had swung back to its normal relations and both condyles occupied the same relative position in the glenoid fossæ.*

In conformity with my observation I present the following deductions:

1st. The chief requisite in stationarily jumping the bite is to prevent the condyle from returning to its former position in the fossa.

2d. When the condyle is stationarily fixed on the articular eminence Nature responds to permanently establish these relations.

3d. The nature of the physiological change is characterized by the absorption and deposition of tissue which probably takes place in the glenoid cavity, resulting in the formation of a new articulation and the obliteration of the old.

DENTISTRY IN STATE INSTITUTIONS.*

By Frederick W. Proseus, D. D. S., Rochester, N. Y.

It gives me great pleasure to present a paper on this subject before the New York State Dental Society, and, should its objects meet with the endorsement of my co-laborers, the essayist will indeed feel well repaid for the effort to bring to your attention certain facts and conclusions arrived at in this line of work.

While my experience in state institutional work covers only a period of about twenty months, I feel certain that it is sufficient to enable me to judge well of its requirements and possibilities.

While the monthly pay-roll may be of great importance and personal interest to one so employed, it should be subordinate, first to the equivalent good rendered, and second, to the profession so represented.

It will be impossible to make comparisons or give reports of this work in different institutions in the state, for the reason that such reports are not sufficient to be found. Very valuable statistics could be gathered from records carefully made in such work. Supt. F. H. Briggs has offered to have printed for his school, a form for the purpose. I have not undertaken to keep such a record, as the time required would hinder more important work. From information gathered, I believe the dentistry, practiced generally until very recent years in all of our state institutions, has been but a slight improvement over that of the time of Ambroise Paré.

It will be necessary for me to give my experience at the State Industrial School of Rochester, N. Y., as I find the work there. This school is conducted under military discipline and has a well-equipped hospital and resident physician. A department for girls, numbering at present about 125, from 12 to 20 years of age; a primary department for small boys, numbering about 225, from 10 to 16 years of age; a department for large boys, numbering about 450, in age from 14 to 21. This latter department is divided into three divisions.

A dentist has been employed at this school for about ten years. I am informed that when the first effort was made to secure dental services much opposition and many objections were raised.

In taking the position, I found my predecessor of five years had done the most beautiful work, but there was utter lack of system and detail in taking into account the work as a whole.

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* Read before the annual meeting of the New York State Dental Society.

An examination of the girl's and primary departments was made each year. Those in bad condition were marked in class 1; those needing ordinary work in class 2; class 3 consisted of those with teeth to be cleaned and having minor defects. In October, nine months after his examination, I found, on entering the work, he had not yet finished all those marked in the first class, while those entering the school had been entirely neglected, unless complaining of toothache. An idea struck me to take the new comers as they arrived in the girl's department, regardless of the lists. So, in March, six months later, I found this department completed except twelve. A new examination was made of the whole girl's department, which included all that needed removal of small amounts of tartar, green stain and diseased gums. This last was completed in September and the new arrivals were being cared for. A new examination was again made for my own satisfaction, and it was completed three months later. The department was now in almost perfect condition.

During this time I had reasons to believe the primary department of boys could be put in perfect condition, so an examination of the entire department was made. Those with abscessed teeth, exposed pulps, bad cases of pyorrhea, excessive tartar, supernumerary teeth, large anterior cavities and irregularities, were marked for immediate attention. Those with ordinary decay, etc., were marked with a cross after their name, meaning—needs attention. Those without decay, green stain or small amounts of tartar and slight inflammations of the gums were not listed.

I began working for those who needed *immediate* attention, and nine months later had the satisfaction of completing the lists, besides caring thoroughly for the new arrivals. In March of this year I made another examination of the entire primary department for dirty mouths, and found forty-seven needing teeth cleaned and but four with filthy mouths.

The larger boys in the three divisions, consisting of about 450, aged from 14 to 21, were allowed to call upon the dentist for relief from pain, fillings, etc., at their own wish; consequently this work was kept well in hand by giving one-half day per week to this department. I should mention here that the time given is one and one-half days each week to the whole school and one-half day to each department.

In September I concluded to try taking the new arrivals of division boys, to see what results could be accomplished. I soon found it impossible to keep the new work caught up with those also needing relief reporting at sick call. Yet, during the whole fall I was able to give nearly half the time to them which was formerly given to the girls and primary boys. I then tried keeping up the new ones and leaving out those returned from parole. It was found impossible to give them the necessary care, and then I resorted, for sanitary reasons, to the removal of all abscessed and badly diseased teeth from the new arrivals, but have found it simply impossible to keep the work up to my satisfaction. Of course, the perfection of the *whole* is the only ideal, which it is impossible to realize under existing circumstances and conditions. But there are many reasons, it seems to me, why this should be the only standard for dentistry in an institution for the young. From a sanitary point, it is of the greatest importance; as a moral influence, for expression and articulation; and also as one of the things sure to be of benefit in after years, and to be appreciated long after other things there received are but a memory.

The average number of inmates for the year ending September 30, 1900, were 830. In March, 1900, the number was 844. There were received in 1900, including new and returned, 521. Making comparisons from an editorial in the April number of the *International Dental Journal,* the new arrivals would be greater than the actual clientele of a dentist in full practice. Of course, the work done in an institution is more simple and requires much less time to complete an operation, but, unless the dentist is quick and watchful of all advantages, he will be a very busy man, especially while the old work is being put in shape.

In the year 1900 the following work was done:

906	teeth filled.
241	teeth treated.
416	teeth extracted.
160	being temporary.
269	roots extracted.
55	sets of teeth cleaned.
56	removed tartar.
40	gums treated.
93	roots filled.
15	abscesses treated.
9	roots treated.

This represents 2,100 operations and 984 visits.

From the manner of keeping records, the number of individuals treated cannot be easily given, as there is not sufficient time to allow the dentist to record everything done. A list of the primary department from April, 1900, to April, 1901, will give some idea of the rate of entrance and the number needing attention, arriving in the department:

April	9
May	8
June	6
July	8
August	19
September	10
October	14
November	12
December	1
January	21
February	8
March	13
Total for year	139

Of this number twenty-one were found needing no attention except instructions in caring for the teeth.

The number of visits required to complete these, was one hundred and ninety-six, the majority being finished at one visit, while a few required from three to fourteen visits. It would be erroneous to compare these results with the larger or division boys for the reason of age. Among them I find many with good teeth and clean mouths, some with one or two simple cavities, an unshed, deciduous tooth, a dead pulp in an anterior tooth, an irregularity which can be corrected by simply extracting one or two teeth, or a supernumerary, while others may present a most deplorable condition caused by tartar, pyorrhea, decay, exposed pulps, and from one to six abscessed teeth, discharging through fistulous openings.

It is *this* class which appeals to me as the one sad and hopeless feature under present conditions. For the sake of *humanity* it should not be; and for the influence on the character and morals of the individual, which eventually affect the morals of the State, it should not be; and we, as dentists, should call attention to this one fact, above all for *sanitary* reasons. It is a blot on the dental and medical professions of the twentieth century which must be wiped out, and I trust the New York State Dental Society will be first in action to hasten the inevitable advance. What would the medical profession think of a surgeon in a State Institution throwing his pus dressings into every nook and corner about the whole institution? Yet a condition as bad, I believe, is allowed to be practiced in all of them. Inmates, with great deposits of tartar, pyorrhea, and abscessed teeth, expectorate in every convenient place. Why not allow a patient with an abscess on the body to squeeze the pus on the grounds, or about the wards, as to allow one with a large alveolar abscess formed, to discharge its contents nearly everywhere? I believe the patient with a large alveolar abscess should be isolated until pus discharge has practically stopped.

To bring about the best results, it will be necessary to have a dentist give his whole time to the work. Institutions that are small and not sufficient to constantly employ a dentist, can receive part of the time, and the dentist furnished by the State can be kept busy in two or three different institutions. The fallacies of procuring the services of a dentist in outside practice are many, the major one being,—should he be anything but a professional failure—his best ambitions are wrapt up in his outside patients and not in the institution. Some may say the field is not broad enough for ambitious young men to accept such positions. This would not be true.

Summing up that which is necessary for the best results in this work, I believe that one or more dentists should be represented on the Board of Managers of all institutions where dental services are required to assure the carrying out of *oral hygiene* and *sanitation*.

The dentist's salary should be sufficient to induce good men to apply. The other expenses would be increased very little for the material.

The equipment necessary for rapid work and best results should include a modern dental electric engine, wall bracket and table, and saliva ejector.

A knowledge of the following operations would be necessary: Regulating; treating pyorrhea, cleaning teeth, setting Logan, plate teeth crowns and white metal caps, pressure anæsthesia for immediate pulp removal and immediate root filling, extraction, filling with amalgam, gutta-percha and cement.

Though one would lose practice in gold filling, this is more than compensated for by the great number of regulating, implantation and replantation cases presented; probably more than the majority of us receive during our whole professional career.

The number of inmates in New York State institutions under the control of the State Board of Charities for the year ending September 30, 1899, were:

Number in institutions	63,595
Number received during year	137,062
Total supported	200,657
Total supported, public fund	133,169
Total supported, private fund	67,488

Taking the total of 137,062, the number received during the year, we have a number approximating the army and navy of the United States.

While the sympathies and efforts of our profession have gone out to the soldiers in our armies, how much more we should try to secure benefit for these poor, unfortunate people cut off from society, and the great majority of them prevented from having dental services should they so desire.

The time of ignorance, prejudice and lack of appreciation for our profession will certainly draw to a close while the 20th century is still young. A few more generations of advanced standing, of college requirements and graduation, and the dentist will not be obliged to beg recognition as a professional man, but his ability, education and character will demand it.

I believe the time is NOW, when our profession should take an active interest in all State institutions where dental services are required. Not from a selfish motive, but for the relief of suffering, moral good, and professional recognition in the State politic.

CLASS-ROOM METHODS OF TEACHING ORAL SURGERY.*

By G. V. I. Brown, Milwaukee, Wis.

The successful teacher of oral surgery, as, indeed, of any other branch, whether in a medical school or elsewhere, must depend for success upon order, attention, thought. To have these he must awaken the interest of his pupils, and in order to do this he must be prepared to select for them just so much of the subject as it is essential for them to acquire, to present these facts in such order that their relation to other portions of the subject may be quite clear, and the impression so strong that at least matters of primal importance may remain fixed without confusion in their minds, at the same time more advanced thoughts should be given which will tend to suggest reference to books and other literature with a view to becoming more widely enlightened upon the subject.

The real topic for our discussion is as to the most ready means of approximating this idealistic result, and it would seem as though the following maxims laid down by those for whom pedagogy has been the study of a lifetime, might aid us in this respect.

1. Attention is the condition of knowledge.
2. Mental growth depends upon attention.
3. Memory and perception depend upon attention.
4. Teaching power is determined by the power to secure attention.

It seems to me that if we would learn principles systematically rather than so much, we would have more knowledge at our command. If we could see the thought as developed in any subject just as we should and must see the thought in reading—and not only see the thought in one subject, but be able to follow it through every branch—then our knowledge would be systematic.

The seven laws of teaching (Gregory).

1. Know thoroughly and familiarly whatever you would teach.
2. Gain and keep the attention of your pupils, and excite their interest in the subject.
3. Use language which your pupils fully understand, and clearly explain every new word required.

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*Read before the Institute of Dental Pedagogics, Dec., 1900.

4. Begin with what is already known and proceed to the unknown by easy and natural steps.

5. Excite the self activities of the pupils, and lead them to discover the truth for themselves.

6. Require pupils to re-state, fully and correctly in their own language, and with their own proofs and illustrations, the truths taught them.

7. Review, review, review, carefully, thoroughly, repeatedly, with fresh consideration and thought.

Nothing is more distressing than to witness a lecturer, manuscript in hand, reading to his audience, unless perhaps it be one who for want of manuscript goes haltingly through, repeating and confusing both himself and his auditors. Between these two extremes of bad illustration of both methods must lie the indication for a proper delivery. In other words, one should neither depend upon a written manuscript nor entirely upon an effort of memory, but should be prepared to speak directly to his listeners with full opportunity for his personal magnetism to keep him *en rapport* with those he desires to impress, able to follow uninterruptedly with his eye the effect of every word, without confinement as to exact phraseology, but ready to change instantly the selection of a word in order that some more striking illustration be used, yet with memoranda for occasional reference to enable him to speak consecutively upon the various divisions of the subject.

Recitational methods are fast supplanting other means of instruction and the results from the standpoint of the acquirement by the student of a limited number of facts certainly seem to justify this change, no longer is it possible for the somewhat picturesque lecturer of a decade ago to adopt the mannerisms of the rostrum once considered such an important feature of medical and dental college instruction, and yet there is perhaps another, little-thought-of, side to this question, for where can a man of high thoughts and firm convictions so deeply imprint the image of his better, more truly ethical self than when as teacher to pupil he speaks of those principles of practice which are at least an echo of all that he would have been, even though not quite what he really is, and without some such uplifting suggestion where is the knowledge of professional feeling to be fostered?

It often seems to be necessary to refer to parts of a subject that properly belongs to another chair, and in this way students are frequently obliged to listen to lectures upon the same subjects from several different professors. This may be avoided in a large measure by reference which will be sufficient to awaken interest without destroying it by repetition, and when in the regular order the subject is reached, much greater benefit will be received by the student and an unnecessary confusion will have been avoided.

The lectures upon inflammation, its etiology and pathology, and treatment, may with considerable advantage be so conducted as to occur at about the same time that the lectures upon operative dentistry are treating of pulpitis and other diseases of the dental pulp. Abscess can follow or precede, with benefit, lectures upon alveolar abscess, pyorrhoea alveolaris and similar affections of the oral tissues which are still within the recognized limits of the course upon operative dentistry, and an added interest will be given to many parts of this subject when properly identified in near relationship to septicæmia, pyæmia, necrosis, caries of bone, and gangrene. The work of the professor of therapeutics can be greatly facilitated by arranging to have his lectures so directed that remedies, the administration of which he is teaching, will be those best applicable to the treatment of diseases which the oral surgeon is describing at about the same period in the course. We have found it extremely satisfactory in our work in the Milwaukee Medical College to have Professor Hill, who teaches therapeutics, give occasional joint lectures with me. By previous arrangement he enters just at the precise moment when I have finished the consideration of etiology, symptomatology and operative treatment, then he follows right on with other treatment, requiring members of the class to go to the blackboard and write prescriptions, subject to discussion and revision by fellow students.

Attention should be called to the importance of a thorough understanding of anatomy, emphasis given to the anatomical relation of associated parts, vessels, nerves, etc., but instead of trying to give a review of the subject the class can be notified that questions concerning the anatomy of the field of operation will be included in all examinations. Students are then obliged to turn back to the pages of their anatomy, closed perhaps with final intent at the end of the second year.

Consideration of surgical cleanliness and aseptic precautions refers directly to bacteriology. Here, again, time which would be otherwise taken, can be saved, if attention be called to the benefits to be derived from care in this direction, and the danger to be apprehended from pathogenic bacteria, particularly such as have an especially pernicious influence, all of which they must prepare themselves to be informed upon at examination time.

Embryology, histology and pathology can each be treated in the same manner.

Orthodontia can be given an added impetus also, because it is upon the principles taught in the technic and lecture courses upon this subject that the preparation of many of our best and newest splints depend, and deformities of the jaws are concomitant with many diseased conditions calling for our treatment.

Even chemistry is woven into the woof of this surgical garment, through its bearing upon examination of urine, blood, and secretions of those organs which we in common with all other surgeons must look to for indications to determine indications or contra-indications for operation.

Hygiene forms an important part of many subjects, while ethics must be carried like a golden thread throughout the entire length and breadth of the course, always in evidence, ever shining to light toward higher and better things.

Thus it will be seen we have gathered within the fold of this one chair the essential portions of every branch of the entire curriculum.

This has been done naturally without serious effort and without any special loss of time—in fact, with a notable saving of time. In so far as we have obliged the students to study out for themselves those subjects which they are required to know, and to rely upon their own knowledge, rather than that imperfect comprehension, which will certainly result from an effort on the part of the lecturer to include these subjects, exhaustedly in his discussions.

This method not only benefits individuals of one class, but its influence also spreads among the other classes, which are still struggling with the discouragements of the theoretical work of first and second years, and becomes a powerful factor in forwarding the study of these otherwise uninteresting branches.

Thus, in a way, it leavens the work of the entire school.

It seems to me that in each college there should be at least one chair which would follow this idea. If the criticism was in order, it might be that colleges do not give enough consideration to the comprehension by the student of the course of instruction as a whole, and too often that interdependency of different parts is overlooked.

I would not urge that the chair of oral surgery be always and in every case a nestor for the other branches. It does not follow that this necessarily must be so, yet it certainly seems to offer a most favorable opportunity for illustrating the direct bearing which each one has upon the other in the completion of the structure, which, as a whole, we are undertaking to build up.

It is an indisputable fact that since we must learn through our senses, the effect upon the sensorium with regard to a given idea is certainly more forcible and reliable if in addition to the vibratory register of the auditory apparatus, vision may send a message likewise to lend its weight to deepen the mental effect. Recognition on the part of the individual is much more satisfactory than when either one of these alone is to be depended upon. Therefore, illustration of any kind, whether by chart, picture, blackboard or in other form, is a powerful aid to strengthen the effect of the words of the lecturer.

The plan I follow in my lectures in the dental department of Milwaukee Medical College is intended to employ all of these various aids. The charts here shown are so prepared that each presents a skeleton of the lecture to be given.

The advantage of these is threefold. First, the student in taking notes can, with little difficulty, under each of the various headings given, write what is said regarding that particular portion of the subject, and, as the course proceeds, these notes will constitute a very valuable compend for future reference.

Second. Having the headings and classifications under his eye, the lecturer can easily follow in the order given, and thus avoid the danger of confusion through repetition. Moreover, charts prepared in this way, unlike written lectures, do not limit the scope of verbal illustrations, and before each lecture reference can be made to current literature, or it may be that a review of older writings may freshen the mind of the speaker and suggest new and valuable ideas.

Thus, no limit is placed upon the width or the breadth of his treatment of the subject from year to year, nor is it necessary to follow a single authority as when lessons are assigned.

Third, and last, if not least. During the hour the eyes of the student, fixed from time to time upon the clearly lettered chart, are unconsciously carrying home to each a mental picture that will doubtless remain a more or less clear image, associated with certain facts, to be easily recalled long after those committed by pure memory alone will have been forgotten.

When students become accustomed to a particular form of illustration it ceases to interest them in the same degree that it did in the beginning, or that some other kind of illustrating device would; therefore, variety is beneficial in this regard. I believe firmly that the time is well spent, in beginning a course, by giving up a goodly portion of the first hour to a discussion of what the work about to be considered really means.

In the first place, almost no one knows what is meant from the surgical point of view by the term *oral* surgery, brought into disrepute, as it has been in the eyes of general surgeons, by the attempting of too much by those who claim to practice it, and, on the other hand, belittled in medical eyes, and in view of the laity also, by narrowing the field of treatment to such conditions as almost every successful practitioner is capable of, and does treat every day in his office. Particularly where medical and dental students are associated together, it is imperative that this work should be distinctly outlined at the very outset.

Its scope, possibility and limitations clearly defined, and such encouragement given in the way of illustrations, as may tend to inspire high and lofty opinion of this surgical branch, so that all may understand in this field quite as much is to be accomplished for the benefit of humanity; quite as many new developments remain to be made as in any other branch of surgery, and that the future offers opportunities to the very fullest of ability of the most highly endowed individual.

Thus respect is engendered which must and does do much, as the course proceeds, to hold the attention and warrant the best efforts of the better class of students at least. It is failure to comprehend this simple fact that leads to difficulty in holding the attention and interest of the class, and doubtless for this very reason also it is true that medical men remain ignorant upon many things which they could learn to advantage from this very course simply because this significance has never been made clear to them in the medical school where they received instruction.

Having, then, given one hour to the consideration of pictures of cases we have treated, and of the most interesting ones that have been successfully treated by others, there still remains the advisability of at some future hour again impressing the fact of the far-reaching importance of the secrets that lie within the vestibule of the human body, the entrance to which is our special charge, its circulatory, nervous, lymphatic, muscular and other systems, and the dependence of their proper functions upon the condition of its parts.

The great passageway of the intestinal canal, and each and every organ connecting directly or indirectly therewith—the heart, the organs of sight and hearing, the brain and reason itself—each of these, while they may be dwelt on from time to time, and can be in a limited way during the teaching, must be grasped at one time in order that their full meaning as a whole may be appreciated by the student.

Therefore, I have prepared a lecture in which, by the aid of the stereopticon, all considerations are taken together and treated with regard to their relation to each other.

The influence of such a discussion reaches far beyond the confines of college walls, and must in time make itself felt upon the members of the community at large, and lead in a direction ultimately to bring those individuals who are in charge of institutions for the education of the young, and the care of public health, to a realization of the importance of the mouth as a factor in general disease and its care as a hygienic measure of public necessity.

By the use of the hand microscopes, which are here for your inspection, microscopical sections of tumors, histological, pathological or bacteriological specimens may be inspected to advantage. These, passed about the class, with slides relating to the subject under discussion, bring directly before the mind of each student interesting facts without loss of time, and to good advantage.

The microscopical attachment to the stereopticon enables them to be thrown upon the wall without the necessity of enlargement into regular lantern slides. Their advantage is that we have them shown in the colors that have resulted from the staining, in such manner as will enable them to be more intelligently described than when shown in black and white.

The virtues of the stereopticon cannot be overestimated. They are offset by the single disadvantage, perhaps, that during the lecture, whenever it is desired that the best effect may be given the class is comparatively in the dark, and there is difficulty on the part of the lecturer in giving and receiving that mutual understanding which undoubtedly accompanies a clear exchange of the message from his eyes to the eyes of his listeners, and back again. Occasionally, too, the question of discipline and order arises, because some member of the class may take this opportunity to disturb.

This, of course, is comparatively minor matter, and can be remedied in other ways.

The use of the blackboard by the lecturer himself is indispensable. Even though he be not an artist, any one can learn to describe, with the aid of a piece of chalk, that which he wishes to be understood. Where it is carried to the extreme of the artistic side, time is frequently expended which might be used to better advantage otherwise.

Moreover, it is not well for the one who addresses the class to turn his back when it can be avoided. Courtesy, at least, demands that he should face his audience, and usually there is some one who is ready to take advantage if his back is turned too often or too long. Rough outlines, however, can be drawn, and more or less ready flow of speech accompany them, so that each stroke can easily be described, and no unnecessary time need be lost.

Having a hospital in the same building with the college, it is possible in Milwaukee to bring cases into the lecture room from the hospital. Of course, clinical cases do not, as a rule, time themselves to particular lectures to be given on particular subjects, but still much can be done with a little care. As, for instance, it happened recently when we had four or more cases of fractured jaws. These cases were brought into the amphitheater, and the subject of fracture was taken up in detail, although out of its regular order in the course. So that the class was familiarized with certain facts which enabled them to understand the cases under treatment, and no repetition occurred, as would have been the case had the cases been described merely with reference to mode of procedure, and then lectured upon later under the title of the regular subject.

This cannot always be done, but when it can its advantages are many to the student. Students should be given the chance to see clinics, as well as to hear the lectures, otherwise they may remain utterly ignorant of the technic of surgical procedure in dealing with practical cases.

Of course, wherever it is possible, students should be allowed to assist in the operations and given opportunity to visit hospital cases, and to witness surgical operations of every nature.

Plaster of paris, the camera and written records should all be combined to preserve for future reference and use whatever may have been interesting or beneficial in the cases that have been treated from time to time by the class.

The what, the how, and the why, according to recent writers, form the basis of all teaching methods. Their significance can only be appreciated by a full understanding engendered through discussion between teacher and pupil. This can only be permitted without loss of discipline in the lecture room by some system of question and answer, therefore one should, whenever practical, allow a few minutes at the end of the hour, during which students may ask questions bearing directly upon the lecture just completed, for it is quite likely that what has been misunderstood by one student may not be clear to the others also, and the nature of the interrogations serve to guide lecturer with reference to the effect upon the class, of the lecture just concluded.

For a like reason it becomes necessary to question the students. In my own work it is my custom to do this in a variety of ways, and for several distinct purposes.

First. To arrest attention whenever a student's eye wanders, or he speaks to his neighbor, or gives other evidence of inattention, I try to fix his thoughts upon me instantly by some direct question—usually one that exposes to the class he has not been following my remarks. The result is instantaneous and beneficial.

Second. I ask questions at the beginning of the hour for the purpose of review, and for the opportunity to make clear portions of the subject that seem to be confused in the minds of the members of the class.

Third. To make students think and use their reasoning powers I am accustomed to ask questions that cannot be answered from the subject-matter of any lecture that may be given, but require conclusions that must be drawn by inference and thought.

It would be manifestly unfair to mark upon answers given upon such questions as the foregoing classes imply, therefore no record is taken.

Fourth. For examination purposes I give written and oral quiz examinations in which an effort is made to get at each individual's knowledge of each division of the subject as it is passed, his faithfulness and power of both verbal and written expression. In the formal quiz work, students are not required to stand, but in the oral quiz, upon which he is marked, each individual is required to rise and stand as he gives the answer.

Fifth. Final examination, which, in conjunction with marks given through the course, determine whether the advance to a higher grade shall be made, I prepare several hundred questions which cover, as far as possible, every aspect of the entire subject, and with the whole class present, give an oral examination that makes cribbing impossible, and has the great advantage of being the best drill that the class ever gets, because, with every faculty on the alert as answers are given, each student listens to a review of the whole subject from beginning to end, much of which will never be forgotten, and instead of being able to answer correctly a very limited number of questions, nearly every man will be able to pass upon nearly every one of several hundred essential facts.

A CASE OF IMBEDDED SUPERIOR CUSPIDS.*

By Edmund Rosenthal, D. D. S., Brussels.

The case which I have the honor of bringing before you to-day does not deserve the title of a "paper," but should, with more modesty and correctness, be called simply an incident in office practice.

The case in question, as may be seen from Model No. I, is that of imbedded upper canines and lateral incisors. Looking at the cast, you will notice that the four deciduous teeth in situ are very much decayed, added to which they were of very bad color. The patient, a young lady of twenty-two years of age, of very anemic temperament, wanted to have these milk teeth extracted and replaced by artificial ones. Before deciding upon any course of treatment, however, we had a radiograph taken in order to ascertain whether the four permanent teeth were imbedded in the jaw, although the shape of the latter did not point to this. We proposed to the patient to attempt to bring two at least of these permanent teeth into line, to which she readily agreed.

The mouth was first put into a healthy condition: all tartar removed, decayed teeth filled, etc. The patient being weak and subject to fainting fits, she was put upon a diet of super-alimentation, and ordered to rest in the middle of the day. On the 7th of January the operation was performed under chloroform.

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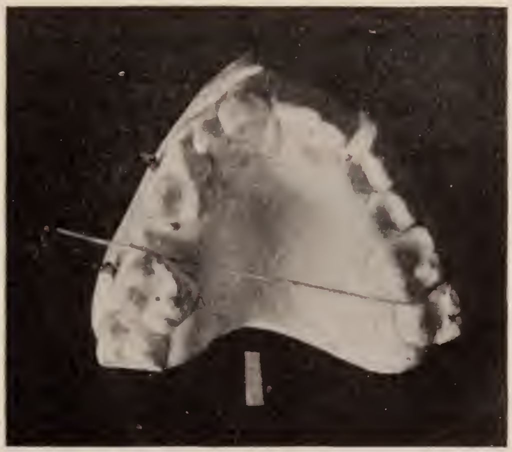
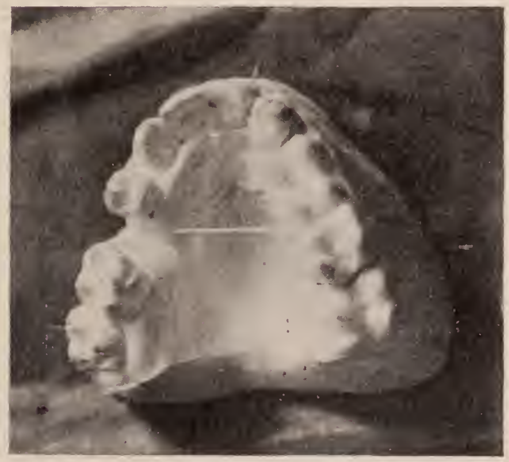
* Read before the American Dental Society of Europe.

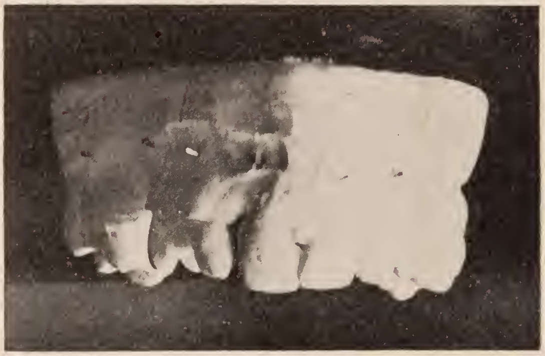


Model No. 1.



Model 2A.

The operation may be divided into four stages: (1) The deciduous teeth were extracted. (2) The position of the canines was ascertained by means of a probe. As the bony structure surrounded the teeth on all sides, except at the extremity of the cusp, it was necessary to make an opening through which the teeth could be brought down. This was done by means of a sharp, straight elevator being pushed high up between the crown and the alveolar wall, first on one side of the tooth and then on the other. Force was exerted directly outward or inward. (3) The teeth were brought down, a simple straight incisor forceps being used for this purpose. The left canine was in a horizontal position, and considerable force had to be exerted to make it follow the direction we wanted to give it. The right one was turned completely upon its long axis, the labial surface turned toward the palate, the palatal toward the lip. Consequently we had to make it perform half a revolution upon itself. As the canines of themselves completely filled the vacant space, the laterals were left in the bone. (4) A previously prepared splint was cemented to fix the teeth in position. The whole operation took about twenty-five minutes.



Model 2B.

Splint.

Strict aseptic precautions were observed before, during, and after the operation. Neither inflammation nor suppuration ensued.

On the 28th of January the splint became loose and was removed with the intention of recementing it, but the teeth were so firm that it was not judged necessary.

Model No. 2B shows the condition of the mouth on the 28th of January. Since then the gums have healed perfectly round the teeth, which seem alive.

THE USE OF FLEXIBLE RUBBER DUMMIES IN ORTHODONTIA AND OTHER TECHNIC TEACHING.*

By J. Q. Byram, D. D. S., Indianapolis, Indiana.

That method of teaching which enables the teacher to intelligently explain his subject, and the student to comprehend clearly that which is being taught may be considered the best. Methods of teaching, like methods of operative procedure, give different results with different individuals; likewise one teacher's methods, be they ever so good, may be of little service to another. In this progressive age, those of us who care to keep abreast with the times must continually seek such methods as will yield the highest results.

The use of flexible rubber dummies in technic teaching is in its infancy, still the field of usefulness is already wide. I am a strong advocate of this method of teaching both operative and prosthetic technic, for with properly constructed dummies all operations can be taught in a skillful and scientific manner, and the principles of some operations can be taught better with dummies than in the mouth. The use of these dummies in technic teaching opens a field for great opportunities. I have been experimenting along different lines for the past year, and find the work both pleasant and profitable. I wish to thank Dr. Webster and others for valuable suggestions on the use of flexible rubber in this line of teaching.

Orthodontia technic is a hard subject to teach, because the correction of irregularities is based on varied mechanical laws and scientific principles. Unless the student is familiar with these laws and principles, or has them demonstrated to him in a practical manner, he cannot have a full conception of what is being taught, or what he is trying to do. If a student construct an appliance on a plaster cast, he is taught that this appliance will produce certain results provided the proper mechanical laws are applied, but in many cases the rigid cast does not enable him to see the particular application to the case in hand. So what we need is some method by which we can show objectively just how these laws governing force are applied. Some may say let this be demonstrated in the mouth. Theoretically, this is very good, but, like clinics for other departments of technic teaching, there is such a dissimilarity in the cases presented that it is difficult to secure material for the case in hand at the proper time. By constructing a number of flexible rubber dummies, representing the different classes of irregularities, we may have a stock of models for demonstration. When the student constructs an appliance for a particular class of irregularities, if he has a dummy representing this class before him, with an appliance adjusted, then he can see the force applied, and at the same time he has a pattern for constructing an appliance.

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* Read before the Institute of Dental Pedagogics, Nashville, Tenn., December, 1900.

Dr. Case did us a valuable service last year when he presented a syllabus for teaching orthodontia technic. I agree with him that the first training a student should have is to construct some of his tools, his stock material and appliances in general. But I believe this should be the secondary object of his work. The primary object should be to work out certain mechanical laws governing the application of force, for the appliance is only the machine, by which the application of force is accomplished.

I fear there is a tendency to make a machine of the student by looking too much to the mechanical side of our work, without involving principles. This will be the result if too much stress is laid on the construction of appliances without demonstrating their proper application. Any student can be taught to do most operations in a machine-like way, but, after the operation is completed, he has very little knowledge of it other than what he gained by merely going through the different steps. It may be asked if he can go through the different steps of the operations—has he not obtained the desired results? While he may have obtained results, he has not obtained the highest possible results.

It is not my object to go into the technic of constructing appliances or the methods of attaching them, but to present my method of demonstrating the application of force by the use of flexible rubber dummies. First, I have dummies with normal arrangement. You will see how the teeth can be separated by the use of elastics, floss, wooden wedges or the mechanical separator. Second, I have a lingual displacement of the superior lateral. The appliance used makes a pressure toward the labial on the lateral, at the same time forcing the central and cuspid apart. Third, I have a labial displacement of the cuspid, and a rotated central. The appliance for retracting the cuspid demonstrates the force applied so that it is drawn distally without affecting the bicuspids or molars. The appliance for rotating the central demonstrates the force applied to it without affecting the other teeth. Fourth, I have a constricted arch. This appliance demonstrates the force applied so that the whole arch is spread, and at the same time draws the incisors distally. Fifth, I have an upper protrusion. This appliance demonstrates the force applied, so that the incisors and cuspids are moved without affecting the bicuspids and molars. The next appliance is for elongating an incisor or cuspid where a small portion of the incisal edge has been broken by accident, but not enough to require restoration. This appliance was designed and constructed by Dr. Alex Jameson, of Indianapolis.

I will only speak of a few of the uses of the flexible rubber dummy in teaching operative technic, for Dr. Webster demonstrated the use of this dummy at Cincinnati in 1898. The interproximal space is filled with a soft elastic substance which approximates the natural gum. This allows the cervical margin of the cavity to extend under the "gum margin." The teeth are arranged as they are in the mouth. The student can see to a better advantage why he should make the margins self-cleansing. He also gets a clearer conception of preserving the contact point, and the principles of wedging. He is working in proximity to the other teeth, so that he must insert the filling material more accurately. He can be taught how to adjust the rubber dam and the use of ligatures. Also the application of all kinds of rubber dam and cervical clamps. With properly constructed dummies he can also be taught the different motions used in extracting.

I consider the flexible rubber dummy to be the best appliance to approximate the mouth for crown and bridge technic. A few of the advantages are: The crown can be constructed under the same conditions as though the student were working for a patient except treating the pulp canal. There is a free gum margin to which he can fit the ferrule almost as accurately as though he were fitting it in the mouth. He gains the experience of shaping the tooth. The interproximal space is filled with an elastic substance, which gives the same effect as gum tissue. The contact point can be preserved as well as in the mouth. Take the construction of a Richmond crown as an illustration. The root is properly shaped and the canal enlarged. The ferrule is fitted to the root and an impression of the ferrule and adjoining teeth is taken. The crown is constructed from this point just as though the work previous to taking the impression had been done in the mouth. When the crown is finished it is fitted to the dummy. The student can now see if the crown has the proper alignment, length, contact, etc. All shell crowns are made on the dummy, using the same principles as though they were made in the mouth. The dummies for bridge technic are constructed to represent partial dentures. There are the same advantages for this work as in crown technic. The method is to construct the crowns, fit them to the dummy and take an impression. Construct the bridge from this point as though it were for a patient. When the bridge is completed it is fitted to the dummy for final adjustment.

I said in the beginning that the use of flexible rubber dummies is in its infancy. I see several improvements that I expect to make next year. One change in my crown and bridge technic will be that each freshman will construct a full upper and lower denture, the lower to be preserved for use in the junior and senior years. The junior constructs the flexible rubber dummy for crown technic to occlude with this lower. The senior constructs the dummy for crown and bridge technic to occlude with the same lower. By using this method of constructing the dummies, all crowns and bridges can be made to an occlusion.

I find the edentulous flexible rubber dummies mounted on an anatomical articulator very valuable in teaching prosthetic dentistry, as well as prosthetic technic. These dummies are mounted on Gritman articulators, giving the lower jaw the natural movements. I use these dummies in the following way: Each freshman takes impressions of them in plaster of paris, constructs the casts, and base plates for the bite. He then takes a base plate bite of the dummy. The length of the bite is determined by arranging the set screw on the articulator. He then constructs the dentures from this point as though they were for a patient, and when they are completed he fits them to the dummy. You can see by this base that the finished work fits the dummy quite accurately. Each junior takes impressions of this style dummy to obtain dies and counterdies for constructing swaged metal bases. I have here another set of dummies mounted on a Gritman articulator. The upper represents a flat mouth with a hard palate. I failed to get the results I hoped to obtain with this, but the effect of the hard palate is fairly well shown. The lower represented a ridge with marked absorption. I have a number of dummies like this which the freshmen take impressions of, for constructing cast metal dentures.

There are a number of advantages for using the flexible rubber dummies mounted on Gritman articulators. They can be made to approximate the mouth better than metal dummies. Plaster impressions can be removed from undercuts. The student can see the possibility of the patient protruding the lower jaw or closing laterally when taking a bite. A series of dummies representing mouths from the normal to the abnormal can be made. By vulcanizing the metal bows in the dummies one set can be removed from the articulator and another be adjusted without any inconvenience. The bite can be raised or lowered, and the dummies can be arranged to represent an upper or lower protrusion. A large number of similar dummies can be constructed from the same mold, so that any number of students can do the same work at one time.

The next dummy is used to take impressions of, for constructing appliances for cleft palate. This dummy is very crude, and I hope to have a better one to present to you next year. As far as I am able to learn, the construction of appliances for cleft palate has not been added to a technic course until this year. Each college has a number of cases of cleft palate during the session, but this class of work is so limited that only a few students get the practical benefits. I have a number of dummies of which this is a fac-simile. Each junior and senior constructs an appliance with the velum attached to the vulcanite. Next year I propose to have each junior construct a similar appliance, but each senior will construct a metal base with a detachable artificial velum. This gives each student a practical knowledge of the technic of taking the impression, constructing the cast, properly waxing the case, burnishing tin-foil, packing two kinds of rubber, swaging the metal base, constructing the mold for vulcanizing a detachable artificial velum, etc.

I am not satisfied with the method of producing the teeth used in the flexible rubber dummies, for operative and crown technic.

A portion of the student's time, consumed in producing these teeth, can be used to a better advantage. Dr. Webster requires his students to carve the fourteen teeth in modeling composition, and then reproduce them in white vulcanite. I require each student to buy two "Weeks" tooth forms. He then dissociates the teeth and reshapes them. It is almost impossible for each student to have typical forms of teeth for the flexible rubber dummy if he carve his model teeth in modeling composition, and then reproduce them in vulcanite. Then it takes too much time to produce the teeth by this method. It is impossible to get typical forms of teeth unless they are reduced in size when they are reshaped from the "Weeks" tooth form. I consider the time required to construct the flexible rubber dummy after the teeth are produced well spent. The student gets the technic of constructing a denture along with the many other practical points.

If a number of colleges can be interested in this method of technic teaching, we can get some manufacturer to furnish the vulcanite teeth at a nominal cost. These teeth will have all the lines, grooves, cusps, ridges, fossæ, etc., on the occlusal surface, but the axial surfaces will be parallel. The student should then shape each tooth, giving it a bell crowned appearance.

NEW FEATURES IN THE TEACHING OF DENTAL ANATOMY AND DENTAL TECHNICS.*

By A. E. Webster, M. D., D. D. S., L. D. S., Toronto, Can.

When I presented the flexible rubber tooth form before this society two years ago all agreed that to place the teeth in a flexible base was a good idea. At that time, and even now, I am asked if these forms will be put on the market so that students may buy them. It is the desire to-day to show why each student should make his own tooth form. The former plan of carving the teeth in compound, reproducing these in gray vulcanite, and then recarving and polishing them was a good deal of trouble, but the student got a good training in tooth form. The present plan of carving the teeth out of white celluloid shortens the work considerably, besides increasing the range of usefulness of the form when completed.

Begin every new subject with what is familiar to the student; so in dental anatomy, as a first exercise, have students examine each others' mouths and teeth. The important parts of the mouth and their relations should be made out. The markings on plaster casts of the mouth should be compared with those in the mouth. The bones of the jaws are examined in conjunction with plaster casts and the oral cavity. The relation of the teeth to other parts is studied in a general way, thus laying the foundation for a more minute study later. From the skull and plaster casts is studied the general arrangement of the teeth, their occlusion and attachment to the bones, the classes of teeth (incisors, bicuspids and molars) and their surfaces. When we say that the student studies from plaster casts, skulls and oral cavity, we mean that each man has before him a cast, a skull and a mouth, and the parts are discussed together, the teacher drawing attention to the part he wishes examined, while the student describes what he sees or feels.

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* Read before the Institute of Dental Pedagogics.

Centrals, laterals and cuspids are all studied together from large models, charts, drawings and the natural teeth. All are wedge-shaped, single-rooted, wide mesio-distally, narrow, labio-lingually; representing a general class, and should be studied together. The upper central incisor for minute study is divided into root and crown. Exact relative measurements are made, e. g.—root and crown—mesio-distal at morsal surface and at the neck—labio-lingual at morsal surface and at the neck. Diagonal measurements from mesio-occlusal to disto-gingival and disto-occlusal and mesio-gingival. Width of labial surface at several points, as compared with lingual at the same points. A tooth may be rapidly modeled up from clay before the class, to show the form of the different surfaces. The students with the teeth in their hands decide the relative measurements mentioned. When there are differences in the teeth held by the students, the question is put to vote, which will give a very good idea of the prevailing size or form. Now a demonstration is given on carving in hard plaster of paris, measurements by calipers in plaster carvings, and as soon as each student shows by his carvings of this material that he has grasped the general idea of the form of the tooth, he is given a rod of white celluloid seven-sixteenths of an inch in diameter, on one end of which he carves a central incisor. A demonstration as to how to work celluloid is made before the student begins to carve this material. At this time the student selects a natural central incisor tooth as a type in size and form that must be followed throughout—plaster casts of fellow students' teeth or those from a skull are used in making a selection of a full set of teeth that will harmonize with the central taken as a type.

The differences between the lateral and central are studied from large models, drawings and the natural teeth. The student then carves the lateral from his selected type. The cuspid is studied and carved in the same way. The bicuspids are studied in general and then in particular, and so with the molars. The celluloid for molars should be nine-sixteenths of an inch in diameter. As soon as a student has carved a set of fourteen upper teeth he begins to think of how his particular type of teeth ought to be arranged to give the most natural appearance. Again he appeals to plaster casts, classmates' teeth and the teeth in skulls, while at this time the teacher is pointing out the general forms from plaster models, charts, lantern slides, etc. In the presence of a number of plaster casts, models, lantern slides and students' mouths, a good general idea of normal arrangement and occlusion may be gained.

The fourteen carved teeth are set up in a block of beeswax, small enough to fit comfortably inside of an ordinary dental flask. A minute study of the soft parts of the mouth is made with as much care as the arrangement of the teeth, using the same aids and using just as much care in the harmony of the parts. The rugæ, palate and eminences of the roots, etc., are carefully carved out in the wax, and must be in perfect harmony with the size and form of the teeth and their arrangement. When completed the block of wax containing the teeth is invested in the flask—separated—wax removed—and in its place is packed a rubber that will vulcanize in about twenty minutes at 250 F. This rubber must be flexible when vulcanized and yet rigid enough to hold the teeth in position while being worked upon. The rubber may be obtained from any rubber factory at about fifty cents a pound. A pink colored rubber may be obtained, if desired. A more flexible rubber may be placed around the necks of the teeth than that which makes up the main body of the form, thus giving rigidity and flexibility just where they are desired. Previous to setting up the teeth in the wax cavities may be cut in them, which will allow the teeth to come close together, and if wax be allowed to enter these cavities it will be replaced by rubber, which will present many of the difficulties of removal found in gum tissue similarly placed. The whole cost of this tooth form is about forty-three cents.

A general study of the tooth tissues is made from sections cut of the different teeth—longitudinal—and at least three cross-sections of each tooth. Altogether, the class identifies the enamel, dentin, cementum and pulp chamber. If the student knows the external anatomy of the teeth and arrives at the conclusion that the pulp chamber is of the same general form, not very much time need be spent on this part of the subject. Careful drawings are made, showing enamel, dentin, cementum and pulp chambers of the sections cut. In drawings presented the histological structure indicated is that obtained from the chair of histology.

If a student can make fairly good drawings of the teeth and of the different sections and tissues and carve fourteen such teeth as I present to you and form the soft tissues of the mouth and arrange the teeth according to the type he has selected, there is not much question as to his knowledge of form in general and dental anatomy in particular. A student will never make a better drawing or carving than he knows, but he may write down a great deal that is mere information and not knowledge at all.

Dental anatomy should complete the technical work of the freshman year, leaving operative technic for the second year. In most dental colleges—and I am sorry to say it is true in the college with which I have the honor to be connected—operative technic is completed in the first year. The student with us never enters the infirmary before January of the second year, thus it is, he has not an opportunity to put into practice or review his technic knowledge or handicraft for almost a year after it is learned, while in some schools it is a year and a half from the time he completes operative technic until he enters the infirmary. I am sure every man here has noticed the awkwardness of his own fingers after a holiday of a month or so. If this be the case with men who have been in practice for years, think of the condition of the student after eighteen months' absence from a work in which he only had at best but a poor training. Operative technic should properly begin about two months or so previous to the student's entrance to the infirmary and run concurrently with the infirmary practice for at least a month. The student could apply his technic to infirmary work before mind and hand have lost their cunning. If the student should meet a case in the infirmary that he is not very sure how to proceed with, he may perform the operation on the tooth form or on natural teeth previous to the next visit of his patient. In this way both the time of the patient and student are saved, and mistakes which would be irremediable in the mouth may be made and corrected in the technic room.

One of the most serious objections in the mind of some teachers to the study of anatomy in the manner here presented is the time it takes. Several teachers have said to me that this carving would be a good thing if we had a four years' course, but I say it is a good thing now, or at any time, because it is the most natural and therefore the most rapid manner in which any one can learn dental anatomy. In proof of this I wish to present to you the work done by our students this term. I wish you to be the examiners and decide whether the students who have done this work know their dental anatomy or not. I wish to show you samples of work done in our technic room for the past three years. Note the product—this year's work was done in half the time of last year's and one-third of the time of the year before. The ability of the students is about the same, the difference is in the manner of teaching. We have a class of sixty-eight students, divided into two sections, each section works two and one-quarter hours every other day in the week except Saturdays. The work shown you represents about twenty-five days work of two and one-quarter hours each, or in all sixty hours. There are few teachers who spend less time on dental anatomy than this.

The committee of this society on the syllabus for operative technic recommends tooth carving, but some will say, Why do carving at all? To such we reply, for two reasons: First, for its educational value, and second, for the usefulness of the knowledge obtained. Carving educates the perception, the acquisition, the memory and reproduction or expression of knowledge. It educates the co-ordination of the hand and mind.

In porcelain crown and bridge work it is essential that the dentist should know the form of a tooth in order to build up the body before baking. In contour inlays a perfect knowledge of tooth form is necessary. In gold crown and bridge work a perfect occlusion is only obtained when the natural forms and conditions are known. In filling teeth the exact form and location of the contact points are essential to get the best results from such operations. In crown, bridge and plate work the dentist should know the normal arrangement of the teeth and their harmonious relations in size and form, and besides he should know the form and relations of the soft tissues of the mouth.

It would seem that to carve the teeth from celluloid and the gums, rugæ and palate from wax gives the best mental and manual training for the time spent upon it. Celluloid is cheap and of the proper color and is easily stained. It is tough and hard, and will take a good polish; it can be moulded to whatever form desired and will bear without deterioration a temperature sufficient to vulcanize flexible rubber about the roots of the teeth. Next year we hope to see blocks of celluloid somewhat of the *form* of the teeth on sale by the depots. In clay modeling *form* is all that can be learned by the student of dentistry that will be afterward useful to him. The material and instruments used and size of the teeth made are all different from anything he will ever use or need in dentistry. The same objection may be urged against carving in soap. Ivory and bone are so hard that the student loses all interest in the work before he gets it cut down to the point where he is thinking of tooth form at all.

Before leaving the subject of dental anatomy I wish to call attention to the strict adherence to the principles of psychology in teaching the subject as has been outlined. "Proceed from the known or familiar to the unknown," e. g., pupils examine each others' mouths, then models and bones. "Proceed from the general to the particular," e. g., study all the teeth, then classes, then individuals, the whole tooth, then its surfaces." "Appeal to as many of the senses as possible," e. g., *sight,* the large models, drawings, pictures, natural teeth and carvings done in the presence of pupils; *hearing*, the teacher directing attention to certain parts. *Feeling.* As Liberty Tadd said to us last year: "We feel form, we don't see it." The student models, carves and draws the forms, he feels, sees and hears described. "Learn to do by doing." "Practical exercises previous to or concurrently with theory," so-called. "Never theory first and practical exercise last," e. g., no lectures on the development of the teeth until the student has at least seen the teeth and identified their relations to the jaws. "Teach facts by the laws of association," e. g., likenesses and differences between the central and lateral. The main difference beween the trained mind and the untrained is one of classification. The untrained mind remembers each fact while the trained remembers only principles, and by working on these the details and facts in connection with them are thought out by the laws of association. In teaching dentistry the grouping of facts around the principles or classes laid down will put the minds of the students in their natural channels, thereby greatly assisting memory, e. g., it is just as easy to remember that all the buccal and labial surfaces of the teeth are convex as to remember that the labial surface of the central is convex, but note how much more knowledge or information there is in knowing the one than the other.

In teaching operative technics the tooth form is almost indispensable. The rubber dam is applied under almost the same circumstances as in the mouth. The size of piece, the size and arrangement of the holes, inverting the edges of the holes under the free margins of the gums, tying of ligatures, application of cervical clamps, rubber dam clamps, clamp forceps, are all well exemplified in the form. After an exercise on the form, the student should be required to apply the rubber dam to his partner's teeth in at least two locations.

Every possible appliance for the separating of teeth, for filling proximate cavities can be studied. The slow means of getting space works admirably. If wedges be placed between the teeth and allowed to remain for some time, space is gained which will be but slowly closed up on removing the wedge. Immediate separation is beautifully illustrated, the teeth coming back to their original positions immediately or slowly, according to the time and distance they have been kept apart. Careless or improper use of the separator will result in fracture of the teeth or destruction of the soft rubber about the necks of the teeth. When cavities have been cut upon the proximate surfaces previous to setting up the teeth and the teeth allowed to approximate each other closely and these cavities become filled with soft rubber, the conditions and difficulties of getting space and getting the rubber out of the cavities and getting the rubber dam in position are quite similar to those met with in the mouth.

Grasp and rest practice on the form is very similar to such practice in the mouth. The place in the cavity for the use of each instrument makes good practice. The classification of cavities and cavity nomenclature are as easily learned while the student is preparing cavities in the teeth, as the names of the carpenter's tools are learned by his apprentice. The student learns the use of the chisel, the hatchet, the hoe and the burr. The celluloid cuts clean, hard and tough, is resistant and leaves a good clean decisive hard margin. If the student has seen and examined a sufficient number of decayed teeth for him to have arrived at a conclusion as to the usual locations of caries, he will appreciate what is meant by "extension for prevention" and cutting fissures out to their ends. When a student prepares a proximate cavity, fills it and polishes the filling, removes the separator and rubber dam he sees for himself if proper extension has been made, if the contact point is in the proper location and of the proper size, he sees if the interproximate space has been preserved or not, and the gum properly protected. Compare the advantage to the student of preparing a cavity in a tooth while it is in its relation to all the other teeth with doing a similar operation in a tooth separated from its associates. The seating of fillings and the lines of force are better understood when they are studied with the teeth in proper relation. At this point I wish to make a strong plea for the teaching of dental engine technic. When, where and how to use the engine is more essential to the safety of the patient in the dental infirmary than all the long-winded lectures that have ever been given on the pros and cons of gold and amalgam. Why is it that the student must learn all about the grasps and rests of the chisel before he may work on a patient's teeth, yet he is supposed to know by instinct how to grasp the engine handpiece, no matter if it hold a stone, a burr, a disk or even a saw? Every student should have a dental engine before he enters the infirmary, and if his operative technic is running concurrently with infirmary work, for a month or so, there is no good reason why the cavities in the tooth form should not be prepared with the burr where its use is indicated. As a rule, every student taken into the infirmary for the first time will expose more pulps with his new engine and sharp burrs in the first few days than he will in the whole of the remaining time he is in the infirmary. The reason for this is that the student, first, does not know when the burr ought to be used, and, second, he cannot control the handpiece. Fillings should be finished in the technic room with the same instruments as in the mouth. Any undue roughness or improper use of files, burrs, stones, disks or strips will show itself on the soft rubber about the necks of the teeth or on the teeth themselves. In no better way can the student study the use and limitations of the different forms of matrices than on the tooth form.

Every kind of filling material may be packed into the cavities prepared in the teeth with the same instruments as in the mouth.

Usually in crown and bridge work technic, the student makes a crown of any size, shape or shade of porcelain, and grinds the root of a natural tooth to fit the band. How much better would the student know the procedures in making a crown for the mouth if he had cut, say, the central incisor, off the tooth form, drilled out the root canal, trimmed the root, fitted band post and cap, selected facing, proper shade, shape and size, ground it up, took impression, invested and soldered the crown, finished and set it. There is no comparison between the two methods for teaching crown technics. The same may be said of bridge work technics. I wish to lay stress upon the opportunities given for the study of a proper selection of teeth in crowns and bridges.

At this time I shall not take up orthodontia technic, but merely show how admirably adapted it is to this class of technic work.

In the study of root canal fillings and the different materials used for the purpose I wish to call attention to the advantages of having each student fill glass tubes the size and shape of the roots of teeth as a first exercise. The perfectness of these fillings may be seen and tested by immersing the fine ends of the tubes into some coloring fluid. After the student has learned by experiment the best way to fill a canal he is expected to fill the root canals of several teeth and later files the teeth down so as to expose the root filling.

In closing, attention is directed to these new features, viz.:

1. The strict adherence to the psychological principles of teaching, as subject is here presented.

2. The harmony of the teeth to each other, to arrangement and to the soft tissues.

3. Carving of the teeth from white celluloid.

4. Implanting these in pink flexible rubber.

5. Usefulness of the form in teaching crown and bridge technics.

6. Usefulness of the form in teaching porcelain inlay technic.

7. Usefulness of the form in teaching operative technics and orthodontia.

8. The teaching of dental engine technics.

9. The teaching of operative technics immediately before and concurrently with infirmary practice.

10. The teaching of comparative merits of root canal filling materials experimentally in glass tubes whose small ends are afterward immersed in a coloring fluid.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE.

DISCUSSION ON DR. M'BRIDE'S PAPER. SEE PAGE 841.

Dr. E. Lawley York: When requested by the essayist to open the discussion on his paper, I regretted that he had selected me as I had given very little thought to the matter of jumping the bite, however, I hope the general discussion to follow will clear up certain points that are still to my mind open to doubt.

In the early part of the paper the essayist expresses himself thus, that up to date no investigations have been made, in order to determine what anatomical changes do take place in order to produce this unconsciousness on the part of the patient.

Whilst I do not wish to say that he has failed to do so, yet I must say that he has failed to convince me that his deductions are based upon anything else but supposition, for reasons I will state later.

The arrested development of the inferior maxilla and consequent malocclusion of the teeth, etc., I will pass over and confine myself simply to the appliances used and the changes that take place.

The method of the essayist whereby the plane of occlusion is corrected and the incisors depressed in their alveoli, is to be recommended, some writers preferring to elevate the bicuspids and molars, which method to me does not commend itself.

The failure of the essayist to gain the desired result with the incline plane cannot be attributed to the principle of the appliance, as others have succeeded with it, viz., Kingsley, Case, Ottolengui, and others, and none of these gentlemen claim such extensive changes in the glenoid fossæ as the essayist. The author claims, if I am correct, that the incline allows too much latitude and does not hold the jaw in a fixed forward position as his appliance does. As the appliance the author speaks so highly of can only throw the lower jaw downward and forward as far as the normal occlusion when the mouth is shut, how is the gradual change spoken of, e. g., 2 mm. a month to be noted? The portion of a circle spoken of which is affixed to the cap cannot be longer or greater than will, when adjusted, allow the patient to close the mouth, so that when closed the jaw is as far forward as that appliance will ever force it. Now, if such is not the case and the result is only obtained by continued pressure, how does the patient with such an appliance masticate properly?

In regard to the adverse criticism, where the jaw could be thrown forward at will to a correct occlusion, had this case been supplied with an appliance whereby the forward movement could have been obtained unconsciously, applied early enough and worn long enough, the desired result would in all probability have been obtained.

The same argument would apply to the photograph of the skull. The quotation from Tomes is misapplied. The form of the glenoid cavity naturally bears an intimate relation to the dentition of the animal and the nature and movements of the jaw. And we invariably find that form maintained in all animals with occasional exceptions.

I fail to see why the jump-bite-plate is likely to permanently enlarge the glenoid fossæ when, in closing the jaw, the condyle has first to be depressed and is then drawn slightly forward on to the articular eminence, if I am to understand the essayist correctly; if this forward position could be obtained without depressing the condyle we should be more likely to expect an enlargement of the fossæ.

The use of the Snow face bow and Gritman articulator enables the operator to construct the appliance with much greater assurance so that when completed and cemented to place it will correctly perform the purpose for which intended, but how it enables us to determine the physiological changes produced in the osseous parts involved, there I am at a loss to grasp. I grant you can better determine the movements of the condyles but not the physiological changes.

The appliance which commends itself to me is well shown in Figs. 6 and 7 and differs very slightly from the appliance described and illustrated in Angle's latest work, page 163. The appliance shown in Figs. 8 and 9, whilst the author lays great stress upon its efficiency, and having used it can speak with greater authority than myself, seems to me to be attended with more difficulties and dangers than the former; the length of the bar must be longer than the greatest extent the patient can open the mouth, and this to be forced down behind a lower molar in many cases not erupted to its fullest extent would mean burying itself in the tissues of the jaw, and perhaps impinging upon and driving into the alveolar process another tooth not yet erupted.

I would also fancy that unless the lower tooth was covered with a metal cap such friction, long continued, would do permanent injury to the tooth it struck against. Again I would fear that it might depress this tooth or act as an elevator and seriously disturb its stability.

Later on the essayist says: A careful examination of the position of the condyles when occupying their normal position in the fossæ will unquestionably reveal what anatomical changes have taken place. Most assuredly not; it may reveal the location or position but not the changes that have taken place.

In conclusion I would like to say that too much stress has been laid upon the changes which are supposed to take place in the glenoid fossæ.

The final resting place of the condyle is only as far forward and downward as the patient could voluntarily move it. The appliance has not made, as the essayist would have us believe it, a new articulation, but merely produced an unconsciousness on the part of the patient to hold the jaw in a fixed position at all times, where he could previously only do so by a mental and muscular effort. Any space that may be left in the glenoid fossæ by this altered condition would in all probability be filled in with fibrous tissue, but never osseous as stated by the essayist.

As to the condyle being moved on to the articular eminence and there retained, with the idea that in such a position mastication would be possible, is out of the question.

Dr. Jenkins: Time does not allow me to minutely discuss the physiological change which Dr. McBride claims to have produced. I would only say that I have had the advantage of seeing all the cases mentioned in his paper, from the commencement to the conclusion of the treatment, and there is no doubt in my mind that his explanation of what takes place in the glenoid cavity is correct. Indeed, from an examination of the actual cases, which are far more clear than any inanimate models can possibly be, I do not see how any other conclusion could be reached.

I beg to add that I am more convinced than ever that orthodontia ought to be regarded as a special branch of practice. Before we had the advantage of Dr. McBride's coöperation, my partners, Dr. Upton and Dr. O'Brian and myself took on this class of cases and obtained what are regarded as satisfactory results; but, since we have seen with what certainty and celerity he, with his exact anatomical knowledge and his inexhaustible fertility of mechanical resource, carries on his treatment, we perceive how much our patients gain by now being in the hands of an accomplished specialist.

Dr. Luce: Responding to Dr. McBride's kind invitation to enter into this discussion, I wish first to express my pleasure at having heard this admirable paper, so well illustrated by the beautifully mounted models. The essayist has presented us with a scientific paper, fortified by a good deal of clinical evidence; the results obtained are most gratifying, but I must beg leave to express a difference of opinion in regard to some of the deductions evolved.

At the outset, I think the title, "Jumping the Bite," a misnomer. Advancing the Bite would be better.

I am convinced that the bite can be "jumped" permanently, both by the conclusive evidence of other practitioners, as well as by several successful cases in my own practice, but I must beg leave to differ with the essayist when he asserts that it cannot be successfully accomplished with the Kingsley appliance; it cannot be ignored that others have produced practically as good results with a modification of Kingsley's device, as the essayist with the so-called jump-bite-bar, which latter device I wish here to point out is not new, having been advocated by Prof. Angle in 1897.*

It would seem to me that this spur device, being in constant action, might have an advantage over the Kingsley plate, which is removable at will, but it occurs to me that there is an element of danger in subjecting the cap and tooth to such a powerful leverage as it must necessarily bear; second molars at the usual age of regulating are not fully erupted and a narrow band at best can be adjusted, which I should fear might become dislodged during mastication.

It is the essayist's contention that this device is a constant preventive of the condyle assuming its original position, and that the former glenoid cavity becomes obliterated, the condyle finding a new point of articulation farther toward the articular eminence; he also denies the possibility of the neck of the condyloid process becoming bent.

I believe the essayist errs in taking so pronounced a position; it seems to me most probable that the neck of the condyloid process does become bent, and in support of this theory I would call your attention to a sketch of a child's jaw at the age of puberty.

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* Operative Dentistry—Kirk—p. 629.

Assuming that this jaw is secured in an advanced position by a Kingsley, or other device, we may consider the jaw as a lever exerting pressure at both ends, with the powerful masseter and temporal muscles applying force nearer the condyloid end. It seems to me a fair assumption that, as the condyle, with its inter-articular cartilage, rests upon a more or less sloping eminence, it may slip backward, causing the neck, being the weakest point, to bend. That the condyloid process may become bent is very apparent by comparing the typical jaw of the adult with that of old age.

It may be that the change is a combination of bending of the process and partial obliteration of the glenoid cavity.

The essayist makes the following statement: "A recent observer has found that the center of motion of the lower jaw is located a short distance vertically beneath the glenoid cavity, but for practical purposes it is sufficiently accurate to consider the position of its axis in the temporo-maxillary articulation. This being granted, the ordinary opening and closing excursions of the models in the articulator are anatomically correct."

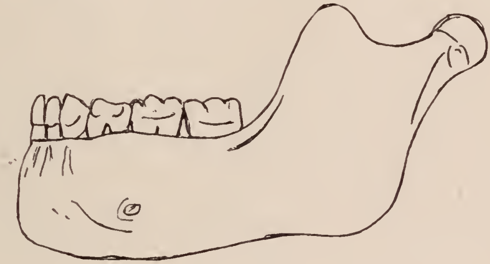

Fig. 1. At puberty. (Gray.)

This I cannot grant, for reasons which I will state.

During the year 1889, while at the Harvard Medical School, I had the privilege of making exhaustive investigations regarding the movements of the lower jaw, under the direction of Prof. H. P. Bowditch; the diagram, *Fig. 4*, to which I wish to draw your attention, is taken from a work published at that time;* without going into detail I will state that tracings of the movements of any given point of the lower jaw were recorded by a photographic method, insuring accuracy, and many interesting results were obtained; it was found that certain errors existed in all descriptions of the temporo-maxillary articulation, as given by the eminent anatomists and physiologists. Figure 4 shows tracings of the exact movements of the lower jaw, the numbers indicating the positions occupied simultaneously by the various points.

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* Movements of the lower jaw. Luce, 1889.

Referring back to the essayist's statement that the center or axis of movement is located in the articulation, I contend that this is not "anatomically correct," rather anatomically incorrect, and any device based upon this principle will fail of true application.

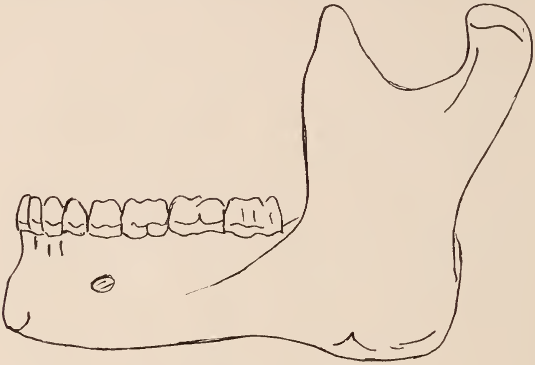

Fig. 2. Adult. (Gray.)

There is no center of movement in the lower jaw; its relative movements vary in different individuals, but in the great majority of cases, when the mouth is opened, the condyle advances and the angle performs a kind of loop motion. The inferior maxilla is suspended or hung in its lateral ligament, allowing great mobility; the contraction of the various muscles, coöperating with and antagonizing each other, undoubtedly plays an important part in determining its movements; it is impossible to reproduce these exact movements in an articulator.

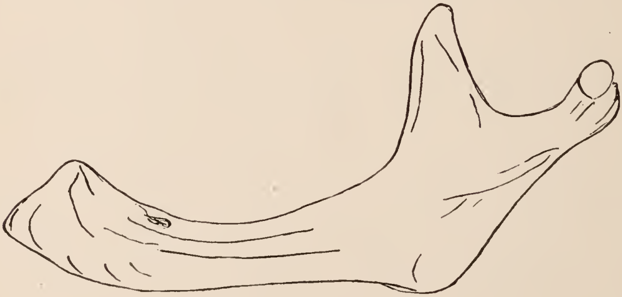

Fig. 3. Old age. (Gray).

If I understand the essayist correctly he has seen some of these cases only four or five times during the whole regulating operation, covering a period of time varying from four to sixteen months; this I can hardly comprehend; it seems to me that there is an element of danger in not being able to watch the progress of such operations; the best devised apparatus may fail to accomplish the desired result unless watched and regulated from time to time. To recapitulate, I believe that the "bite can be jumped;" I believe that the anatomical changes seek the direction of the least resistance and that the neck of the condyloid process becomes bent; it is possible that the glenoid cavity receives a deposition of tissue, for "Nature abhors a vacuum."

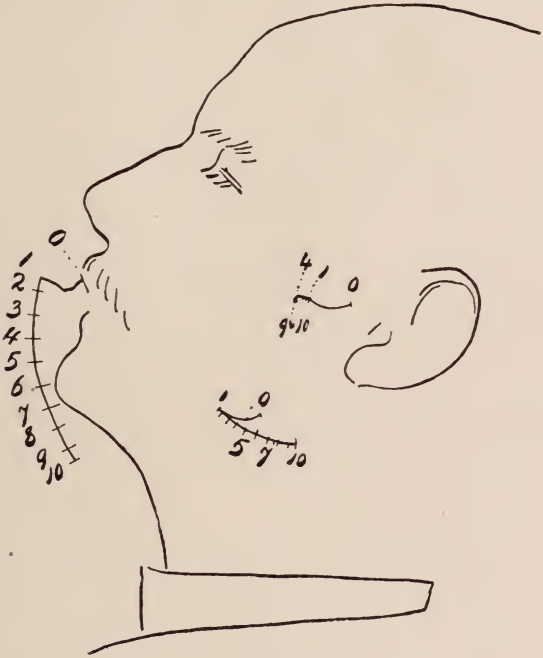

Fig. 4.

I recognize the advantage of the constant action of the "jump-bite-bar," but believe that a modification of the Kingsley device will accomplish as perfect results.

Dr. McBride: I wish to express my appreciation for the kind and courteous reception I have received from this society and for the interest manifest by the members in the subject which I have had the pleasure to present. However I deeply regret that I have not expressed myself with sufficient clearness to avoid grave misinterpretations of certain phraseology in my paper.

Although I do not know the gentleman personally, yet there is no name in the list of orthodontists that I entertain with greater respect and esteem than that of Norman W. Kingsley, and I do not wish it to be inferred that I have discredited the merits of an appliance that bears his name and has stood the test for a quarter of a century. Quite the contrary. In the description of a case in which he made a plate for jumping the bite he says: "In a few weeks the patient had acquired the habit of shutting the jaw in its new place and the work was virtually complete."*

Seven years later Dr. Ottolengui says that jumping the bite "is simply a question of habit,"† and in reply to the question as to "what changes take place in the glenoid fossa after the bite has been jumped, and if it is possible to place the jaw in its previous backward position," he states: "What happens in the glenoid fossa is a matter of absolute indifference to me." The plate makes it more comfortable for the patient "to bite where I want them to bite than anywhere else. I leave it there and after a few months the new habit is formed. It might be possible for the child to carry the jaw back but not when in occlusion, because the new occlusion will lock it in position."‡

I fail to comprehend wherein I differ from these gentlemen when I claim that after the plates had been worn a few months the patient had acquired the habit to bite forward to the normally arranged occlusion, but when the muscles were relaxed the condyle would return to their natural position in the glenoid fossæ.

Dr. York fails to see why the Kingsley plate is likely to produce an enlargement of the glenoid cavity when in closing the jaw the condyle has first to be depressed and is then drawn forward on the articular eminence. There was no mention of the condyle being depressed. The language is perfectly clear if one has the right conception of the anatomy of the parts. As the jaw is moved forward the condyle moves downward as well as forward on the articular eminence, but not depressed and then forward. How could the condyle be depressed?

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* *Dental Cosmos*, 1892; page 360.

† *Dental Cosmos*, 1900; page 177.

‡ *Dental Cosmos*, 1900; page 885.

I do not agree with Dr. York that the quotation from Tomes is misapplied. While it is true it was made in reference to comparative anatomy, yet if the glenoid cavity bears an intimate relation to the dentition and to the nature and movements of the jaw, if these conditions are permanently altered the form of the glenoid cavity, depending on these conditions, would also be changed. Dr. York speaks of "occasional exception" in the form of the glenoid cavity, but does not state what these exceptions are. These very exceptions in man caused by the advancement of the jaw, when in occlusion, are what we are considering.

From a practical standpoint Dr. York's argument in reference to the "adverse criticism" lacks foundation, for in this case the "correct occlusion" could not be obtained by throwing the jaw forward. The forward closure, as stated by Dr. Goddard, was the man's masticating occlusion, and, as occlusion is defined by the orthodontist, it was by no means a correct or normal one. Undoubtedly unless the asymmetry was confined to the superior maxillary, to produce a normal occlusion and correct the facial expression, an appliance to move the jaw backward, not forward, should have been supplied in early life. He also suggests that had an appliance "been applied early enough and worn long enough the desired results would, in all probability, have been obtained." We are informed that the patient was thirty years of age and that nature had been supplying an equivalent to an appliance for "twenty years or more," and I judge that the result in this case was not the "desired result."

I do not know where Dr. York got the preposterous idea that the bar of the appliance shown in Figs. 8 and 9 must be longer than the greatest extent the patient can open the mouth, when the illustration which he possessed represented the exact length of the bar. He also examined the original models with the appliance attached. Earlier in his discussion he speaks intelligently as to the length of this bar, but according to this statement the bar must be 2 cm., if not 3 cm., in length, "this to be forced down behind a lower molar!" The length of this bar is about 5 mm., or even less.

The appliance illustrated in Figs. 6 and 7 commends itself to Dr. York, and he says it is not unlike the appliance advocated by Dr. Angle for jumping the bite in his latest work. In this, excepting the anatomical adjustment, I quite agree with Dr. York, but, in cases where the plane of occlusion has been corrected, I do not exactly understand how Dr. Angle retains the occlusal plane without the use of the bite-plate unless he allows the appliance with which he corrects the occlusal plane to remain in place as a retainer. It has been my experience that the length of time required by nature to permanently establish teeth that have been elevated is much longer than when they have been moved through the alveolar process. Dr. Angle's appliance is a good one and the only criticism I have to make is the one Dr. Angle makes himself, viz., that it is necessary to alternate the device on opposite sides of the mouth as the deciduous teeth were lost or the permanent teeth showed indications of displacement. To me this weak point is most objectionable, for, as our patients come from every quarter of Europe and sometimes can remain but a short time in Dresden, it is impossible to continually watch all cases. The development of my method was quite independent of that of Dr. Angle's. How long he had been using his device, consisting of a spur operating in front of a plane of metal, prior to the publication of his excellent book on "Malocclusions of the Teeth," is unknown to me. I first used the appliance illustrated in Figs. 6 and 7 in 1899, and, as stated in my paper, the trouble I experienced in preventing the displacement of the anchor teeth led to the adoption of the modified form, accompanied with the bite-plate which preserves the occlusal plane and prevents even the slightest displacement of the anchor tooth. This combination I first used in the fall of 1899. Dr. Luce calls our attention to my modified appliance, Figs. 8 and 9, as not being new. I have explained that the development of my appliances was original, yet I make no claims as to priority. I know that in the fourth edition of Angle's System of Regulation and Retention of the Teeth, 1894, there was a case described, to which Dr. Luce refers, where the bite was jumped by imbedding a spur in the crown of a first inferior molar. The second temporary molar was missing and the second bicuspid had not yet erupted, and the spur operated on the mesial surface of the first superior molar. In the ten cases represented there was not one favorable to adjust such a device, and its usefulness can well be judged by its omission from Dr. Angle's recent book. The appliance which I have described and illustrated and for which I claim the production of the mentioned changes in the temporo-maxillary articulation, cannot be isolated from its attachment, its anatomical adjustment, and its retainer—the bite-plate. I have called the whole a method and as such it must be considered.

I have not experienced the element of danger to which Dr. Luce refers, and his evidence intended to favor the theory that the neck of the condyle becomes bent has no relationship or analogy to the subject under consideration. No one disputes the fact that bones can be bent. The change that takes place in an old and toothless jaw is a change in its entirety, as the jaw develops the angle at which the ramus joins the body becomes less obtuse, till in adult life it is nearly at a right angle. The decrease in the angle is due to the separation of the jaw by the development of the alveolar process and the growth of the teeth and consequently upon the loss of the teeth and absorption of the process the jaws approach each other more closely again and the angle becomes more obtuse. The neck of the condyle necessarily participates in the general alteration in the form of the jaw.

Basing his argument on this faulty evidence and other suppositions he has neglected to observe that the occlusion of the teeth play a most important part in the resultant changes in the temporo-maxillary articulation when the jaw is advanced. The relative position of the condyle is dependent upon the occlusion. My observations do not confirm the theory that the neck of the condyle becomes bent.

Dr. Luce's investigations regarding the movements of the lower jaw are most commendable for their scientific value, and it is to be regretted that his publication on this subject is not more widely known to the dental profession. My attention was first called to this publication by Dr. Upton in 1899. Subsequently I attempted to verify these observations and it is sufficient to say that invariably I found them correct; but I must bear witness with Dr. W. E. Walker that in no case did I obtain comparatively so extensive movements of the condyle as represented in Dr. Luce's drawings. In his investigations he made tracings of the condyle when the jaw was advanced, occupying a position undoubtedly somewhat more advanced than when the bite is jumped, and it is interesting to observe that under these conditions, according to his own drawing, the temporo-maxillary articulation, during the ordinary movements of the jaw, more closely approaches a hinge joint. To illustrate this I call your attention to the accompanying drawing taken from Dr. Luce's publication. Until the jaw is open beyond the influence of the bar appliance (Fig. 8), or from 1 to 3 or 4 in the drawing, the forward movement of the condyle is but slight. I still maintain that to consider the axis of the jaw in the new articulation is accurate enough for practical purposes.

Again Dr. York fails to understand how it is possible to determine the changes from time to time that are taking place in the glenoid cavity and causing the gradual advancement of the lower jaw when the appliance brought the jaw forward at once to its new position. By a careful reading of the paragraph you will see that the teeth were not in occlusion when these changes were noted, but the jaw was opened beyond the influence of the appliance and the condyles allowed to rest in their most posterior position in the glenoid cavity, and when so examined the relative position of the lower jaw, as indicated by the end of the bar on the occluding tooth, gradually advanced.

There seems to be some misconception as to the means I employed in observing these changes and also a confusion of ideas as to the nature of the changes.

In passing I wish to call attention to the erroneous idea Dr. York entertains as to the use of the face bow. He says by its use "you can better determine the movements of the condyle." To determine the movements of the condyle with this apparatus would be impossible. The movements of the condyle could be observed only by an apparatus that in some way is fixed to the lower teeth and extends out and around the cheek terminated directly opposite to the head of the condyle, such as was used by Dr. Luce in recording the movements of the lower jaw. The point opposite the head of the condyle, moving in concert with it, would record its actual movements. The record of the face bow made at the beginning of the operation indicates the forward position—not the movement—of the condyle in its relation to the glenoid cavity, which position is as far forward and downward on the articular eminence as the jaw has been moved forward, and when the face bow is readjusted at the end of the operation it will naturally record the position that the condyle occupied at the beginning. Consequently, if during the operation the condyle has altered its position, or if it remain unaltered, one is enabled to determine the *nature* of the physiological changes—not the physiological changes as incorrectly quoted by Dr. York.

From the fact that the jaw could not take its former backward position, it was evident that a physiological change had taken place somewhere. If, at the end of the operation, the condyle was located backward and upward from the position it occupied as indicated by the record of the face bow, or, in other words, had returned to its previous place in the fossa, the fact that the change had taken place in the inferior maxillary would not be open to question; but if the position of the condyle remained unaltered, as it did, then the change must have taken place in the glenoid cavity posterior to the condyle. The result of these changes prevented the condyle from going back to its previous position in the cavity. The anatomical relations of the condyle to the glenoid fossa were permanently altered. This alteration in the anatomy of the parts I called an anatomical change. Therefore I claim that, knowing the position of the condyle before, at the beginning, and after the operation, one is enabled to determine the nature of the physiological changes, and the consequent anatomical changes of the parts, notwithstanding Dr. York says "most assuredly not."

Dr. York has not a clear idea as to the final resting place of the condyle. It is not as far downward and forward as the patient can voluntarily move it, but only so far downward and forward as the jaw is moved forward. He makes a direct contradiction to the possibility of the operation when he says, as to the condyle being moved on the articulator eminence and retained with the idea that mastication is possible, is out of question.

Dr. York claims that too much stress has been laid upon the changes that are supposed to take place in the glenoid cavity and that the appliance merely produces an unconsciousness on the part of the patient to hold the jaw in a fixed position at all times where he could previously only do so by a mental and muscular effort. If the jaw is held unconsciously in a fixed forward position at all times, according to Dr. York's theory, this advanced position must be maintained by the expenditure of muscular energy operating incessantly. I must acknowledge that this is the first time my attention has been called to such miraculous muscular energy. Its existence is quite foreign to the teachings of physiologists, and, if it exists, my patients do not possess it.

Without modification he denies that I have produced a new articulation, but in explaining his theory of incessant muscular energy he informs us how "any space that may be left in the glenoid fossæ by this altered condition would be filled in," thus admitting, in contradiction to his statement, that a new articulation is formed. He, as well as Dr. Luce, has overlooked the facts of my observations in these cases. First, that there was a physiological change somewhere, the result of which prevented the jaw from returning to its previous backward position.

Second, that, during the operation, backward pressure applied at the symphysis, when the jaw was slightly open, caused a decided pain in the temporo-maxillary articulation.

Third, that when the jaw was distended an examination of the parts disclosed the fact that the cause of the pain was in the posterior part of the glenoid cavity.

Fourth, that the condyle did not change its antero-posterior position in its relation to the glenoid cavity during the operation.

Fifth, that Cases VI and VII gave the strongest evidence that absorption of newly formed tissue was produced in the posterior part of the glenoid cavity.

I believe it was Dr. Farrar who made the remark during a discussion on this same subject that until the fine anatomical points are worked out by scientific investigations "much of the talk in society meetings must seem somewhat ill digested." It is along this investigative line that I have been working, and, though the investigations are incomplete, I claim that, from the abundance of my clinical evidence, the observations I have thus far made are not foreign to the truth.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

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EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D. D. S.

THE INTERNATIONAL DENTAL FEDERATION.

In connection with the meetings in London this year a most important meeting was held at Cambridge under the immediate superintendence of Dr. Geo. Cunningham. These meetings were begun in London. Dr. Chas. Godon called the first meeting to order and the following were present: Dr. E. Sauvez, Dr. F. Hesse, Dr. F. Aguilar, Dr. J. Franck, Dr. E. Förberg, Dr. G. Cunningham, Dr. A. W. Harlan, Dr. C. Godon and Dr. J. E. Grevers. The first meetings were held in order to permit the International Committee on Education to meet. This committee was composed of delegates from Belgium, Holland, Denmark, Sweden, Norway, Germany, Austria, England, United States of America, Canada, Switzerland, Italy, Russia and other countries, to the number of seventeen. After the usual preliminary work the meeting was begun by the selection of a chairman, Dr. T. W. Brophy, of Chicago, and vice chairmen, W. B. Paterson, London, E. C. Kirk, Philadelphia, and E. Förberg, Stockholm. On Wednesday, August 7, the joint committees met at Cambridge in the Physiological theatre, under the presidency of Sir Michael Foster, M. D., F. R. S. After a few words of welcome by the chairman, Dr. Chas. Godon responded and then Sir Michael Foster delivered a most interesting address which was listened to with marked attention by an audience of nearly one hundred, all gathered for this occasion. Unlike many other addresses, this was an epoch making occasion. The speaker pointed out in the most unmistakable manner the paths of the medical and dental student. Up to a certain point they would march side by side, but when the necessity for a medical or dental training was to be undertaken their paths were to diverge. The fundamentals were gained side by side. This is a new thought in Great Britain where it has been deemed a necessity to take a double qualification—medical and dental. After the address a luncheon was partaken of in the Trinity College Hall. No speeches were allowed at this luncheon. At 2:30 the session was resumed. Dr. Joseph Griffiths, one of the surgeons of the Addenbrooke Hospital read a paper, which was followed by Dr. Sims Woodhead, Dr. Franck, Dr. E. C. Kirk, Dr. T. W. Brophy, Dr. Förberg, Dr. Cunningham, Dr. F. Hesse, Dr. Aguilar, and others, including Dr. Rosenthal, of Belgium, Dr. Grevers, of Amsterdam, Dr. Hadesup, of Copenhagen, Dr. Sauvez, of Paris, Dr. Bryan, of Switzerland. The consensus of opinion was that the address of Dr. Foster in the morning (which we will publish later) struck the keynote of future dental education. "If you wish a boy to become a dentist let him have the manual training early, at eighteen or nineteen. Do not force it upon him at twenty-five or later. Let him have physics, chemistry, and a modern language or two and then go in for a profession." Some of the best educators in the world were present and they applauded most heartily the sentiments as spoken by Sir M. Foster. We can only hint at the work that was accomplished in Cambridge, as the day was so full of incidents—luncheon, a garden party, a dinner and then a fête at Merton Hall, the residence of Dr. Cunningham. This was held from 10:30 P. M. until after midnight, two or three hundred being present. On Thursday Dr. Brophy operated at the Addenbrooke Hospital for closure of cleft of the hard and soft palate through the courtesy of Dr J. Griffiths. The chief remembrances of Cambridge is the splendid meeting in the Physiological theatre, the luncheon in Trinity Hall, and the banquet in Downing College and the fête at Merton Hall, which was rendered most pleasing by the cordiality of the host, Dr. Cunningham. The next meeting of the International Dental Federation will take place in Stockholm, in August, 1902. Dr. E. Förberg, of the committee, is a prince of entertainers and the meeting will be most successful. The records of this meeting will appear first in *L'Odontologie*, Paris.

THE BRITISH DENTAL ASSOCIATION.

The meeting of the British Dental Association in London this summer was most successful, as the program was carried out to the letter and the meeting was largely attended. All of the papers promised were forthcoming and usually at the time promised. We are not in the habit of dividing hours and days into so many particles as is the custom in England, but in spite of the ½ S. and ¼ S. most of the papers were read on time. It is not expected that many persons will discuss a paper, so only two or three, as a rule, make observations on a production. The paper of Dr. Leon Williams, and that of M. Cloquet attracted most attention. Mr. K. W. Goodby and Mr. D. Coush read very interesting papers on "Some Points in the Etiology of Dental Caries" and "The Development of Secondary Dentine."

The paper of Dr. Geo. Cunningham, "Dentistry as a Factor in Public Health, Especially in its Relation to the Working Classes," was most timely and showed great labor in preparation. This paper attracted much attention on account of its length and hence was discussed very briefly. Mr. Cunningham has been at work for many years in this field and if he had done nothing more than to recapitulate the scenes with the match workers his labors would not have been in vain. We do not recall from a wide course of reading any one dental subject more interesting than Cunningham's work in connection with the manufacture of matches in its relation to the health of the worker. The clinics or "demonstrations,' as they chose to call them, were of varied interest. They were quite up to the usual standard in the U. S. A., as was evidenced by the crowds around each chair or table. Everything from immediate regulation to making a crown or giving gas was demonstrated. The social features were most prominent, consisting of luncheons, dinners and receptions. The first night before the meeting a reception by the metropolitan branch of the B. D. A.; next day at the Dental Hospital of London; Sunday, luncheons and teas, including that of Mr. Howard Mummery; Monday, banquet. Reception at the London University on Saturday evening and numerous private functions. It would be strange if an American could come away from London and not be impressed with the professional and social courtesies of his Anglican brothers. For more than thirty years we have visited the shores of Great Britain and we have to place the first mark of our appreciation to the credit of the members of the B. D. A. for their cordial and friendly greetings.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review:

Dear Sir:—The thirty-first annual session of the New Jersey State Dental Society is now a thing of the past.

It occurred at the usual place, Asbury Park by the sea, on the 17th, 18th, 19th of July.

The morning session, Wednesday, July 17, was opened as is the custom, with prayer, and after roll call and incidental preliminary business, the president, Dr. F. Edsal Riley, of Newark, read his address, which, as is common, had reference to the successful year past, and made some recommendations looking to the advancement of the N. J. Society. After its reference to the proper committee, the session adjourned until evening. The afternoon was given up to social features and to visiting the exhibits which were well worth seeing.

At the evening session, papers were read by Dr. W. St. George Elliott, of New York City, entitled "Painless Dentistry," and Dr. H. W. Northrop, of New York City, entitled "Soldering Made Easy."

A new feature was introduced at this session by passing around to all those present printed copies of each paper, so that all could readily follow the speaker from copy or refer back if any question arose. Dr. Elliott spoke of the "little" things in practice, little points in operating, little points in personal matters, said a brusque style often suggested pain; one should attain painlessness by 1, careful operating; 2, proper and sharp instruments; 3, absolute dryness and 4, various medicaments, following these in the order of prominence given. If a tooth is sensitive all over, he believes it wisdom to fill with oxyphosphate for a year. Believed vibration of burs principal cause of pain. Said ordinary burs were too coarse. Spoke of the desirability of sharpening one's own burs, requiring about three minutes' time. Described how it should be done. Makes it a rule never to use burs the second time without sharpening. Considers it desirable to make one's own burs. (?) Believe dam seldom necessary for plastic work, and not always for gold. Dry cavity thoroughly, soak in cocaine with ether or chloroform for five minutes, was one suggestion, cataphoresis another method but the element of uncertainty affects result. Prophylactic treatment offers field for investigation in relieving pain.

Said one gr. of opium an hour before operation or one-half gr. opium and five drops of aconite root was often useful, as well as the coal tar derivatives; had had no success in the "suggestive" method; no success in distracting attention. A large number participated in the discussion, among them Dr. B. F. Luckey, of Paterson, N. J.; said a clear head, a steady hand, sharp instruments and dryness accomplished much, which was but repeating the essayist.

Dr. Head, of Philadelphia, spoke of dentists being better qualified than physicians as regards the medical indications under such circumstances.

Dr. H. W. Northrop on practical crown and bridge work, endeavored to show how soldering could be easily done; said that with the arrival of vulcanite, soldering fell into disuse; spoke of the need of perfect combustion with the blowpipe. Learn to handle blowpipe with left hand, so the right can be used to handle solder, borax, etc. Describing various methods of investment, he most approves coarse marble dust, mixed with plaster. Described his method of investing and heating; claimed that it was not necessary to dry out a case, but a useless waste of time; says there is less liability of checking teeth. "If you want solder to flow have the metal of your case hot enough to cause it to soften and spread from contact with heated surface. The discussion was participated in by a few, but no new points were developed. Thursday morning a paper was read by Dr. W. S. Capon, of Philadelphia, entitled "Porcelain fillings after twelve years."

Dr. Capon is an acknowledged authority on porcelain inlays, and hot as was the morning the room was crowded and all listened attentively. Said a knowledge of how to unite art with mechanics was necessary for one to determine to what extent porcelain should be used.

Said it was a surprise to know the great durability of corner sections; claims porcelain to be an ideal filling in approximal cavities. Says under such circumstances it saves poor structure. Spoke of the great improvement made in twelve years in the variety of shades and the uniformity of fusing. Referred to the great advantage of the electric furnace, spoke of the trouble with cements; said the use of rubber dam was seldom necessary. Believes porcelain inlays to be the strongest and most durable filling for poor teeth.

The entire afternoon was devoted to clinics, and to visiting the exhibitors. There were fifty-seven clinicians on the list, and nearly all put in an appearance. Thirty-seven exhibitors were on the program, but several came at the last moment until there were just fifty exhibitors all told. In the evening a paper entitled "A Study of Acids Occurring in the Mouth" was read by H. H. Boom, M. D., of Philadelphia, and Dr. W. E. Griswold, of Denver, Col., presented a paper describing his "System of Retaining Springs for Partial Plates and Removable Bridges."

Dr. Boom said there were twenty-five varieties of bacteria occurring in the mouth, sixteen of which were found capable of occasioning fermentation of carbo-hydrates, producing acid, the one of greatest interest to dentists being lactic acid, $C_3H_6O_3$, which is best known as the acid of sour milk. Its relative amount in saliva does not exceed .75 of 1 per cent. Spoke of acetic and butyric acids as accompanying it.

He said finally: "We make the broad statement, then, that in pathological constitutional conditions, although we may find uric acid, acetic acid, and other organic acids present in saliva the acidity of saliva is largely due to the presence in it of acid phosphate of sodium." He said "This is offered as a theory, the truth of which chemistry seems to sustain." The paper was discussed mainly by Dr. Head, of Philadelphia, and Dr. B. Holly Smith, of Baltimore.

Dr. Griswold's paper was merely a description of his method which has already been largely advertised.

The morning session of the last day was the business meeting. The first thing was making Miss Maysie Hull, the daughter of the treasurer of the society, an honorary member. Miss Hull has long been regarded as "the daughter of the regiment" and it was very fitting that she should be made an honorary member.

The election of officers then followed resulting as follows: President, W. L. Fish, of Newark; vice president, F. L. Hindle, of New Brunswick; secretary, C. A. Meeker, of Newark; treasurer, H. A. Hull, of New Brunswick. Executive committee: Drs. Irvin, Hanke, Sutphen, Adelberg.

Dr. W. E. Truex, of Freehold, was elected on the dental commission, vice Dr. G. Carleton Brown whose term expired at this time. Thus closed a memorable meeting. There was universal lament that an important paper by Prof. Wolfram E. Dreyfus, of Columbia, University, on 1, "The Relation of the Physiological Action to the Chemical Constitution of Certain Modern Anesthetics;" 2, "The Relation of the Chemical Constitution to the Physiological Action of Modern Antiseptics," 3, "Formaldehyde" was not read.

Prof. Dreyfus was prevented being present by a great bereavement, but it is believed that at the first fall meeting of the Central Dental Association of Northern New Jersey, he will present the paper. The program was graced with the pictures of the principal officers, and a badge was given to each one as he registered. This badge had the historic Jersey "Hornet" on its face and was very neat. Altogether it was a good meeting.

Yours truly,
"THE BOROUGHS."

MEMORANDA.

Dr. G. C. Dohall is in New York.

Dr. K. Davenport is visiting in the U. S. A.

Dr. Wm. N. Cogan paid a flying visit to Chicago in August.

Dr. A. W. Harlan visited the B. D. A. this summer in London.

Dr. W. D. Miller is at his old home in Newark, Ohio, for a visit.

Dr. Chas. Godon and Dr. E. Sauvez were at the B. D. A. meeting.

Dr. William A. Spring, of Dresden, visited the United States in August.

Mr. A. C. Clark, of Chicago, was in London during the B. D. A. meeting.

Dr. T. Frick, of Zurich, Switzerland, was in London at the B. D. A. meeting.

Dr. J. Edwin Boozer, of Columbia, S. C., spent a few days in Chicago in August.

Dr. R. Anema, of Holland (an old student of the C. C. D. S.), was in London.

Dr. J. E. Grevers, of Amsterdam, and Dr. Witthaus attended the B. D. A. meeting.

Dr. O. Zsigmondi, of Vienna, Austria, was in London this summer attending the B. D. A.

Dr. L. C. Bryan, of Basel, and Dr. J. H. Spalding, of Paris, were in London at the B. D. A.

Drs. E. C. Kirk, and W. W. Walker attended the meeting of the British Dental Association.

There were more than 700 at the luncheon in the Hotel Cecil the first day of the B. D. A. meeting.

Dr. Garrett Newkirk has been chosen dean of the College of Dentistry, University of California.

M. G. Vian and M. Quedot, of Paris, and M. Maurice Bey were in London at the B. D. A. meeting.

We noticed Dr. Joseph Walker, an old time veteran of many years standing, at the B. D. A. meeting.

Drs. T. W. Brophy and L. S. Tenney attended the meetings of the British Dental Association in London.

Dr. C. E. Pearson, of Toronto, Canada, read a paper and gave a demonstration before the B. D. A. in August.

We noticed Dr. J. Morgan Howe, of New York, and Dr. L. T. Hall, of Ann Arbor, Mich., at the B. D. A. meeting.

Dr. E. Förberg, of Stockholm, and Dr. V. Hadesup and Dr. J. Secher, of Copenhagen, attended the B. D. A. meeting.

Dr. Haddy, of Madrid, and F. Aguilar, of Madrid, editor of *La Odontologia* were in London at the B. D. A. meeting.

M. Choquet read a very interesting paper on "Sterilization of Dentine in Living and Dead Teeth" at the B. D. A. meeting in August.

Mr. W. Booth Pearsall, F. R. C. S. I., of Dublin, came over to the B. D. A. meeting and introduced Dr. Brophy to the B. D. A. session the first day.

The fourteenth annual meeting of the Northern Illinois Dental Society will be held at Joliet, October 16 and 17, 1901. J. J. REED, *Secy.*

Dr. Rosenthal, of Brussells, Dr. J. Franck of Vienna, Dr. Weiser, of Vienna, and Dr. F. Hesse, of Leipzig, were in London at the B. D. A. meeting.

Dr. M. H. Cryer, of Philadelphia, attended the meeting of the B. D. A. in London this summer as well as many others whose names we did not obtain.

The fourth annual meeting of the Southern California Dental Association will be held in Los Angeles on October 8 and 9, 1901.

LEWIS E. FORD, *Sec'y.*

THE ROENTGEN SOCIETY OF THE UNITED STATES.

The second regular meeting of this society met September 10-11, at Buffalo, N. Y., and presented a most excellent program, demonstrating helpfulness of X-ray in pathological conditions.

At the annual banquet in the Hotel Cecil on Monday, August 5, there were more than 300 in attendance. The president of the Royal College of Surgeons and Mr. Christopher Heath being present. Mr. S. J. Hutchison, M. R. C. S., L. D. S., presided and acted as toastmaster most acceptably to those present. The festivities lasted until about midnight. Dr. Kirk, of Philadelphia, responded in behalf of the visitors.

EDITOR DENTAL REVIEW: The president of the Northern Illinois Dental Society in his address last year stated that of the five societies originally organized the Northern "was the only one still doing business."

We wish to take issue with the gentleman, as the First District Society, formerly the Central Illinois, and the Western Illinois, has met annually since their organization in 1882. The meeting for 1901 will be held in Monmouth, October 1 and 2, and visiting members are always welcome to these meetings.

R. W. HOOD, *Ex-Com.*

At the annual meeting of the New Jersey State Dental Society at Asbury Park, July 18, the following officers were elected for the ensuing year: President, Wm. L. Fish, Newark; vice president, Frank L. Hindle, New Brunswick; secretary, Chas. A. Meeker, Newark; treasurer, Henry A. Hull, New Brunswick. Executive committee, Frank L. Hindle, New Brunswick; H. S. Sutphen, Newark; A. Irwin, Camden; W. W. Hawke, Flemington; Oscar Odelberg, Elizabeth. Membership committee, J. A. Duffield, Camden; G. M. Holden, Hackettstown; W. H. Pruden, Paterson; T. Star Dunning, Paterson; H. P. Marshall, Newark.

CHAS. A. MEEKER, *Sec'y.*

GEORGIA STATE DENTAL SOCIETY.

Georgia State Dental Society at its last meeting elected the following officers for the present year: President, H. H. Johnson, Macon; first vice president, A. M. Jackson, Milledgeville; second vice president, E. A. Tigner, Milledgeville; corresponding secretary, O. H. McDonald, Atlanta; recording secretary, S. H. McKee, Americus; treasurer, H. A. Lowrance, Athens; journal editor, W. H. Weaver, La Grange. Executive committee: J. C. Brewer, chairman, Blackshear; B. H. Patterson, C. C. Campbell, B. F. Hair, H. W. Walker. Examining board: Jno. H. Coyle, chairman, Thomasville; D. D. Atkinson, secretary, Brunswick; B. F. Sims, E. H. Reid, Thos. Cole.

Next time of meeting second Tuesday in June, 1902; place, Macon, Ga.

OFFICERS OF THE SOUTHERN BRANCH OF THE NATIONAL DENTAL ASSOCIATION.

President, Dr. H. H. Johnson, Macon, Ga.; first vice president, Dr. L. G. Noel, Nashville, Tenn.; second vice president, Dr. Geo. S. Vann, Gadsden, Ala.; third vice president, Dr. W. G. Mason, Tampa, Fla.; treasurer, Dr. B. D. Brabson, Knoxville, Tenn.; corresponding secretary, Dr. C. L. Alexander, Charlotte, N. C.; recording secretary, Dr. S. W. Foster, Atlanta, Ga. Executive committee: One year, Dr. E. G. Quattlebaum, Columbia, S. C.; one year, Dr. I. Simpson, Rock Hill, S. C.; two years, Dr. A. R. Melendy, Knoxville, Tenn.; two years, Dr. J. G. Fife, Dallas, Texas; three years, Dr. V. E. Turner, Raleigh, N. C.; three years, Dr. W. K. Slater, Knoxville, Tenn.

Next meeting will be held in Atlanta, February 18, 1902.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners, to examine applicants for a license to practice dentistry in this State, will be held in Chicago on the 17th, 18th, and 19th of October, 1901, at the Northwestern University Dental School, corner of Franklin and Madison Sts.

Candidates must come provided with the necessary instruments, rubber dam, and gold, to perform practical operations and such other work as is deemed advisable by the board.

Those desiring to take the examination should matriculate with the secretary ten days before the meeting. The examination fee is ten dollars.

J. G. Reid, D. D. S., *Secy.*
1006 Champlain Bldg.,
126 State St., Chicago, Ill.

OBITUARY.

Dr. C. E. Esterly.

Dr. C. E. Esterly, one of the prominent dentists of Kansas City, Mo., died August 10.

Edgar J. Ward, D. D. S.

Dr. Edgar J. Ward, of 5319 Prairie Ave., whose offices were in the Columbus Memorial Building, Chicago, died July 11, 1901, after a prolonged illness.

Dr. Ward, was a very active man engaged in business as well as professional life. He held a professorship for several years in the Columbian Dental College, was a member of the Knights Templars and several other organizations. He leaves a wife and son. The burial was at Oakwoods.

Dr. Elmer C. Goldthorpe.

Whereas, In the death of Dr. Elmer C. Goldthorpe the Englewood Dental Society has sustained a loss which will be deeply felt by our society and the community at large; be it

Resolved, That the Englewood Dental Society hereby expresses its appreciation of the worth of Dr. Goldthorpe to his profession during his life with us, and

Resolved, That a copy of these resolutions be sent the family and the dental journals and that they be entered upon the minutes of this society.

A. J. Oakey,
Alfred Guthrie,
C. L. Davis.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE SCIENTIFIC OCCLUSION AND ARTICULATION OF ARTIFICIAL TEETH.*

BY E. J. PERRY, D. D. S., CHICAGO, ILL.

It has seemed to me for years that some sharp line of distinction should mark the difference between the work of the regular prosthetist and his cheap-john competitor. Of course, there is generally a difference, and in many cases a marked difference, but the difference is not the kind of difference which should mark the work of the regular man. It may be a difference in finish, shade, size, or position of the teeth; a mere matter of judgment or taste or care; not a definite and distinct difference in the art and science, but a difference in degree only of really the same thing. And in this may be found, I believe, the reason for the apparent advantage the cheap man now has over his regular competitors. I have maintained for years and urged it boldly that the cheap-john was as honorable as the regular man, unless the regular man put into his work art and science; and if there be a difference at all, it favors the cheap-john, for he sells a cheap thing at a cheap price, and the regular man sells a cheap thing at a higher price. If art and science cannot be the distinguishing feature, then dental prosthesis will continue to be controlled by the men who have the most business enterprise.

Gentlemen, the value in an artificial denture is proportionate to the art and science put into it, and if you want a price, you can get it by putting into your work these two ingredients. Art, science, skill and labor is the only basis upon which we can stand safe and secure from any permanent harm from the business enterprise of the cheap-john.

So I hail with delight the great movement now on, which is working out a scientific law upon which an artificial denture can be constructed. It is gratifying that dental prosthesis is to be or is already so placed upon a pedestal of science and art, so that the world will recognize it and so secure that the business enterprise of men cannot pull it down. The scientific occlusion and articulation of artificial teeth is nothing more and nothing less than the copying of nature's method; the arrangement of the cutting and grinding surfaces of the teeth in such a way that they can cut and grind. Upon examining the jaws we find one jaw, the superior, stationary. This carries the teeth of the upper set bearing certain characteristics. We find the lower jaw loose, carrying the lower teeth, having certain characteristics. We find certain distinct peculiarities in the movements of the lower jaw. Now, if we are to mimic nature with our artificial dentures, it seems to me self-evident that we should have an anatomical articulator. We cannot arrange the teeth in the mouth; it is not practical. Therefore, we should have an articulating machine or device which copies exactly the movements of the lower jaw; so that when we grind and locate a tooth in the prosthetic studio, and then carry the work to the mouth, and ask the patient to make these same movements with the jaw itself, we find we have done the thing we intended to do. Therefore, the first thing, the absolutely indispensable thing, is to obtain an articulator capable of mimicking the anatomical movements of the lower jaw. Manifestly, this cannot be done with the plain line articulator; in fact, the plain line articulator does not articulate at all; it is only a hinge, and inasmuch as it is not the size of the jaw, it is not even an occluder. Therefore, I hold it to be the very worst device ever used in the laboratory, as you cannot articulate with it at all, and can only occlude imperfectly. The Bonwill articulator I find the most desirable, although the Gritmann may be used. The Snow is also an articulator; that is to say, any of these articulators may be used, and with each one you can articulate on scientific lines an artificial denture, as they were all designed to copy the movements of the lower jaw.

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* Read before the Chicago Dental Society.

In the arrangement of an artificial set there is a law to guide; not a rule, a law. Bonwill discovered that the lower jaw was constructed so that an equilateral triangle may be found by starting at the center of one condyle, drawing a line straight through the face to the center of the opposite condyle, forming the base of a triangle, which has its apex at the median line on the cutting surface of the lower incisor. He found that this distance was four inches, so he arranged the condyles of his articulator four inches apart. Therefore, the apex of this triangle will be the cutting edge of the lower incisor at the median line, and will be one definite point from which to work. The importance of the occluding bite now becomes apparent. This should be secured with great care; the wax should represent the length of the teeth, and the restoration, at least an idea of the fullness or restoration, should here be determined; especially the restoration so far as the six oral teeth are concerned. The position of the lower incisors and the restoration of the lower lip and the median line marked. These two base-plates are now securely melted together in position by a hot spatula. Now remove these occluding bites, place them on the models, and then place the whole on the articulator, with the cutting edge of the lower incisor at the median line, exactly at the apex of the equilateral triangle before described. This can best be done by using a pair of calipers. The heels of the models should be set so that the lines of the triangle will cross the molar surface at the same point on each side. The eye, however, is sufficiently accurate for this.

Now, what have we got? We have these models in the laboratory related to each other as they are related in the mouth. We have the upper one stationary, and the lower one possessing exactly the movements which characterize the lower jaw. In effect, we are working upon the natural jaw. We can take hold of the lower jaw of the articulator and operate it just as the patient will when using the teeth. We can see the effect of the lateral movement, or of the gliding movement, and so arrange the cutting and grinding surfaces that they will cut and grind, with full confidence that the patient will operate them the same way exactly when in use. This is what is meant by an anatomical articulator. All the cutting and grinding surfaces will be ground, not glazed, and should be so arranged that when the teeth are thrown into any position of articulation they will touch at many points, and easily glide into the full position of occlusion. Proper mastication is made up of a series of movements of the lower teeth over the upper ones, gliding from a variety of positions of articulation (and there are millions of them) to the position of complete occlusion.

I regret that I cannot in a five-minute paper touch upon the relation of the overbite to the compensating curve and the length of the cusps. These have a definite relation to each other; they should be studied; they are plain, and susceptible of easy application.

SELECTION OF SHADES.*

By E. A. Royce, D. D. S., Chicago, Ill.

It is difficult to understand why the subject that has been assigned to me for this evening has been so entirely neglected, but the great variety of shades that can always be found in the normal natural denture seems to have entirely escaped observation. It is unfortunate that this subject should have to be discussed in the evening, for while it may be necessary to use artificial light at times to test the colors, during shading up, such light is of very little value in the exhibition of the varying shades, where close discrimination is necessary. So the points to be made to-night cannot be so fully verified as if we had good daylight for our use.

It may have been noted by most of you that a set of natural teeth are not all of the same shade—the cuspids are a bit dark—but except for this one change, little attention has been paid to the varying colors of the natural teeth, but investigation proves that it is a rule, with few exceptions, that in the natural dentures, from the median line to the molars, either above or below, no two teeth of the same shade stand side by side. The upper central incisors are the lightest, the laterals are darker, and the cuspids are darker still. The first bicuspids are generally lighter than the cuspids, and the second bicuspids lighter than the first. The molars generally vary but a shade or so from the second bicuspids. Of course you understand that I am speaking of the shades of normal teeth. The lower centrals are darker than the upper centrals, and the shading deepens to the cuspids and lightens again to the molars in a manner similar to the upper teeth. Although the molars may be much lighter than the cuspids, they are not as light as the centrals of the same set, generally four or five shades darker. It is my observation that it takes teeth of five or six different shades to make up a single denture. At the February meeting of the Odontological Society of Chicago I read a paper which was published in the April, 1901, number of The Dental Review, in which I gave a table of the shading of the teeth in fifty mouths; it is hardly necessary to reproduce it at this time.

One of the most important factors in the study of shades is the quality and quantity of light. This applies to both the natural and artificial teeth in and out of the mouth, and is a point that has not been appreciated by the dentists, though artists are quick to observe the effect of different lights on their colors. Only a short time ago a certain building in the city was entirely vacated by the artist tenants because another building of yellow brick was built near by, not that the light was cut off, but the reflection from the yellow wall interfered with the nice distinction of shade. With this in mind I changed from a buff to a green decoration in my operating room with a very great improvement in the light. The quantity or strength of the light is another factor that we must deal with. You cannot judge shades in a very strong light, either sunlight or a north light, and many of the mis-matches made in our dental depots are due to the strong light or buff shades at the windows. The light in which teeth are selected should be about the same quality as that in which they will be seen when in place in the mouth, and in selecting teeth for ladies it is well to test them by artificial light.

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* Read before the Chicago Dental Society.

The effect of the environments upon the teeth is one to which I wish to call your especial attention, as the natural teeth are partly hidden—and shaded by the lips and surrounded by the pink of the mouth the shades are so blended that they appear to be all of one color, but put the mouth under close examination, pull away the lips and cheeks and let the light get to the teeth clear and unobstructed, and you will be surprised at the great variety of shades that will appear. The same conditions which blend and soften the shades of the natural teeth making them appear to be almost the same color, magnify many fold, the artificial appearance of teeth that are too light or those sets of teeth that are made up of one shade.

In order to convey to you the difference in the coloring of the teeth, I had to adopt a method of measuring the variation of shades. If I see a very slight difference in the coloring of two teeth I say they vary one shade, as this difference in coloring increases, the increase is expressed by using higher numbers, so the numbers do not refer to any shade ring, but is my method of expressing the density of color. I take the upper central incisors of each set as standard or naught, and each tooth in the set is compared to the central.

In selecting teeth for full upper and lower dentures the size and shape of all the teeth and the color of the upper central incisors should be determined according to temperament, with this as a foundation to build upon the color of the other teeth should be selected. The laterals should be one, two, or even three shades darker than the centrals and of the same color. As I have found the greatest variation in the natural teeth with the yellow base, I would be guided somewhat in my selection of the teeth by that. If a yellow base, I should say two or even three shades dark for the lateral. If a blue base one or possibly two shades dark. The shade of the cuspids is very important in the make-up of a set of teeth, and at the same time quite difficult to determine, they range from three to nine or ten shades dark and are usually the darkest teeth in the mouth. Sometimes the cuspids seem to assume a brownish tinge and one is tempted to say that nature has made a mistake in their selection, but the effect in the natural teeth is all right, so it will be in the artificial if the natural is imitated. While the natural range for the cuspids is three to ten shades dark, the best result, in most cases, is obtained by taking cuspids of six or eight shades dark and of the same color or as near as can be. The first bicuspids are from five to seven shades darker than the centrals, and the second bicuspids, four to six shades darker. The two molars may be of the same shade and are usually about the shade of the second bicuspid or perhaps one shade lighter. The lower centrals should be one to three shades darker than the upper centrals, the lower laterals two to four, the lower cuspids range five to eight shades dark and the first lower bicuspids four to eight shades darker than the upper centrals. The second bicuspid is about four to six shades dark and the molars four or five shades dark. It is difficult, of course, to find the proper shades for a set of teeth, but they are made and can be procured.

It is not possible at this time to give any formula or fixed variation of shades that can be used in every case, but the eye of each dentist must be trained to select the proper shades for the case in hand, and this can be done only by close observation of the natural dentures. A set of teeth shaded up in the manner I have indicated, will go far to relieve the artificial appearance of our dentures, and if properly mounted and adapted, both patient and dentist will be pleased with the artistic result.

ADAPTATION OF DENTURES.*

By A. O. Hunt, D. D. S., Chicago, Ill.

After all that has been said and written upon the methods of retaining dentures, whether it is atmospheric pressure, capillary force, adhesion, etc., there is a common agreement that when perfect adaptation is secured, the best conditions prevail and the result is accomplished. I think we can find no better term to express what we mean, than adaptation. In the use of this term, however, much more should be understood by it than now. The denture should be adapted to all parts of the oral cavity that can in any way affect the retention or displacement of it. Let us consider what these may be. For a full upper denture we have the hard and soft parts of the palatal portion, the attachments of the muscles along the buccal and labial border. We have parts that do not change materially, and parts that are constantly changing. If, then, we can secure an equal bearing over the hard and soft parts alike, a firm resting place for the denture on those parts that change the least, with a freedom of movement of those muscles that are likely to displace the denture, and use those muscles that will retain it, we are working upon an intelligent basis with every promise of success.

First, for the hard and soft parts, compensation must be made either on the cast or in the impression (both of which are in a measure faulty) for the greatest pressure or bearing on those parts that yield the most to pressure. This to be found out by a careful digital examination of every part upon which the denture is to rest, and accurate notation made upon diagrams. With the cast, proceed to make such compensation as the conditions have indicated. Scrape from the palatal surface of the plaster in such locations as the diagrams show the soft parts to be, to the depth varying from the thickness of tissue paper for soft, to that of heavy brown paper for *very* soft places, corresponding to the contour of each several place. There is great variation in the forms of these soft places. In cases where the anterior portion of the alveolar ridge is soft and flabby, it is not necessary to treat that portion of the cast.

For the upper jaw and the buccal and labial walls of the alveolar ridge and for the posterior margin of the plate, scrape in the same manner as in the palatal portion, so that in the finished denture the margins will be firmly pressed into soft tissue all around.

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* Read before the Chicago Dental Society.

As to the muscles, these must be forced upward to their normal positions by extending the margins of the plate higher between the muscular attachments than elsewhere. To find just where these attachments are, lift the lip upward and outward to the fullest extent, at the same time moving it laterally, observing the full action and marking with a sharp instrument on the cast, the form and extent of the movement. These marks will show in the finished denture and will be the guide for cutting away the material to allow for their free movement. They will also indicate the locality where the margin of the plate is to finish so that the muscles cannot exert downward pressure.

After this, locate the margins of the plate definitely so that the margin shall be in close contact, even imbedded in the soft tissues at all places where the muscles do not interfere.

Next, the parts that do not change. The palatal portion of the mouth, the region of the malar process backward above the maxillary tuberosities and the canine eminences are those portions of the upper jaw that undergo little or no change. Five places in all.

For the lower, the space between the attachment of the buccinators and the top of the alveolar ridge and the corresponding places below the inferior cuspids; four in all.

The muscles of expression all anastomose in the orbicularis oris of the mouth. If one moves they all move; they are in constant motion and unless an entirely free movement is allowed them, they are quite sure to displace the plate.

In the upper jaw we have no depressor muscles; but in the loss of the teeth, especially the cuspids, the orbicularis muscle droops to a considerable extent, and unless this is brought back to its normal position by extreme elevation at the cuspids and at the region of the tuberosities, this excess of loose inactive muscular tissue hangs as a dead weight on the outer rim of the plate and with the slightest movement of the facial muscles, acts as a force to displace the denture.

In the lower jaw we have no elevating muscles on the outer margin; along the lingual border we have the mylohyoid extending on both sides; the sublingual, the attachments of the geniohyoid and glossus muscles, which in action lift the denture from the gum. In forming either the upper or lower denture, the shape should be such that the buccinators shall be one of the great factors in retaining the denture in position. In regard to all the others whose movements are detrimental, a place should be made in the plate for the full action of all muscles where the margin extends over and above them.

The buccinators and the orbicularis oris muscles can both be utilized to retain a denture, if the denture is so finished that they can grasp or press into and against the plate.

In compensating on the cast a "relief" is sometimes used. By some this is characterized as an air-chamber. If it is used to raise some hard part of the cast and its edges conform to the tissues, it cannot in any sense be called an air-chamber, as in a very short time the portion that has been raised will be in contact with the tissue underneath.

After all, the most important part of the construction of a denture is the securing of a good impression. While plaster-of-paris is undoubtedly the best material for this purpose, it will not give what is desirable in the first effort; as it will not push or lift the lips and cheeks back to a normal position. The only way I have of accomplishing this, is to take a first impression, make a cast from it; then cut above the margins so given in the region of the cuspids and over the tuberosities sufficiently to carry the impression material high up in those localities. Then make a tray of modeling compound over this cast so prepared and take a new impression which will give the result desired.

For the lower, a first impression is taken with ordinary beeswax; when the impression material is nearly down to its place, place the fingers well back in the mouth and press the buccinators well outward; then forcing the material firmly down on the jaw at this region, also below the region of the cuspids. Press the wax well down on the lingual sides all around. Remove and cool. Cut away from the lingual side all surplus in order that the muscles shall have a free normal movement. Fill this impression with thin plaster-of-paris, replace in the mouth, press firmly down, at the same time instructing the patient to thrust the tongue forward out of the mouth, saying, "farther, farther, farther," until the plaster has set. Whatever margin is shown in the cast along the lingual sides will be the definite margin for the finished plate; as by this method you have obtained the full action of all the elevating muscles.

These descriptions apply to the making of dentures on plastic bases. Where metal bases are used particularly for the upper cases, something more is necessary. As the hard parts of the mouth are the prominent ones in the die and are the first to be battered or changed in the swaging, it will be necessary to make a relief of wax or metal on the cast of varying thickness as indicated by the mouth. These should also conform to the contour of those places. In the location of the muscular attachments the cast should be built out with wax to correspond to the movement of the muscles as indicated by the examination.

It is almost impossible to leave this subject where it is, as the consideration of the retention of artificial dentures involves so many other things, such as the arrangement and articulation of the teeth to cover the variations in the manner of accomplishing mastication in different individuals, the relation of the lips and face to the teeth and so forth; but enough has been presented, I hope, to elicit a free discussion of the subject.

THE SOLUTION OF DENTAL PROBLEMS.*

By H. D. Hatch, D. D. S., New York, N. Y.

(correspondent's report.)

Your correspondent is an evolutionist, and believes in gradual change rather than in new creations, *en masse*. Believes that we are too prone to look for something new in every journal and at every meeting, when, perhaps, the matter in the last journal or the essay of the last meeting remains undigested or unproved.

Hence the title of this report, which is made by prefixing the words "The Solution of" to the title of the correspondent's report last year, which was "Dental Problems."

Dr. Ottolengui then asked for ideas concerning their solution, but the problems themselves so overshadowed the last question that it did not receive its share of attention.

Then, too, as committee on practice last year, I corresponded upon several subjects pertaining to practice, and was appalled by the lack of uniformity, and by the flat contradictions of men of long experience and reputed to be accurate observers.

For instance, those who thought oxyphosphate cement did, or might, injure the pulp, numbered forty-six, as against thirty who thought it was not injurious. Of those who thought it injurious and gave a reason, fourteen said phosphoric acid and two arsenic.

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* Read before the New York State Dental Society.

All of which led your then committee on practice to remark that our cements needed looking into, as probably some of the difference in opinion arose from a difference in the composition of the various cements.

At the same time to urge the employment by this society of a chemist, to whom samples of filling materals might be submitted for analysis.

The same report closed with a quotation from Dr. Robert Morris of New York, which seemed to us apropos. This was in part as follows: "I hope that another century will see the establishment of a medical court with a judiciary which has no other occupation than weighing evidence and giving rulings upon that large part of medical knowledge which can be classified."

Hence the following letter, which was sent to some fifteen men, nearly all of whom are eminent as original investigators:

"As correspondent of this society, it becomes my duty to gain the views of eminent men upon a selected subject.

Will you kindly reply to the following questions:

In our attempts to solve the many problems now before the profession, what methods are best to pursue?

Should each individual worker pay his own expenses and do his own work in his own way?

Or, should commissions be established and money furnished by state and national societies?

Would the profession be advanced and more uniform practice attained by the establishment of a court or commission, containing, besides eminent practitioners, judges, men of judicial minds and training, who would collect scattered facts, weigh evidence, and give rulings upon disputed subjects?"

To this letter eleven replies have been received, upon the quality of which this society is to be congratulated.

Occasion is here taken to publicly thank the writers.

Dr. Robert R. Andrews of Cambridge, Mass., writes as follows:

"As chairman of the Stomatological Section of the American Medical Association, I am really too busy in preparing for its June meeting to give the letter which I have received from you the consideration which it should have. The questions which you propose seem to me to be of great importance to the future of our profession, and deserve the most careful consideration, as I have no doubt they will receive from better hands than mine. I regret that I can, at this time, give but a brief reply.

Among the bright young men who enter our profession from the better colleges, there are always a few who have the inborn faculty necessary to pursue scientific investigation intelligently.

After graduating, most of these men give a large amount of time and money to research work. They strive earnestly to solve any scientific questions which appeal strongly to them.

They are earnest, conscientious workers, who are not known simply because they are not sought out. Some of them are unable to procure, by reason of the great expense, the necessary apparatus for carrying out their work, and, since their work is wholly in the interests of the profession, it seems only right that some means should be found whereby such a court or commission could search them out and see that proper and adequate apparatus be provided. A department for research work could be established without great trouble in all our dental schools, and picked men under the eye and care of competent professors, could begin a career of investigation which might promise much for our profession's future. If the commission that you speak of should be established, with the proper moral and financial support of the state and national societies, these workers could give a certain part of their time to the research work that should be proposed by the court or commission. And for this they should always receive adequate compensation.

I believe that the profession would be greatly advanced and benefited by the creation of such a body as you proposed in your letter, and I sincerely hope that it may be established.

I regret that I am obliged to answer your courteous communication so briefly. Very truly yours, ROBERT R. ANDREWS."

Our former secretary, Dr. Charles S. Butler, writes:

"To your first proposition I should say *yes* most assuredly; and to the second that all contributions for investigation should be made through endowment of regular chairs in some one or more of our best schools, that the effort may be permanent.

I can see nothing to be gained by the adoption of the third proposition. The purpose of the profession should be toward endowment of special chairs in our well-conducted schools. Very sincerely,

CHARLES S. BUTLER."

The following letter is from that venerable and venerated teacher, Dr. James Truman, of Philadelphia:

"1. 'In our attempts to solve the many problems now before the profession what methods are best to pursue?'

The question is not sufficiently definite. Each problem must receive special attention and cannot be placed in a mass and a general rule adopted for the whole. Some problems need laboratory investigation, others both laboratory and clinical observation, and others again require therapeutic examination in clinics. Each of these methods may be used separately, or combined. My own view is that the solution must largely depend upon individual effort and the value placed by the person upon results obtained.

2. 'Should each individual worker pay his own expenses and do his own work in his own way?'

Two questions are here involved. It will depend entirely upon the individual whether he should meet his own expenses.

He must first prove his capability, and this can only be done by making many elaborate investigations and, measurably, proving certain abstruse points. Having thus established a certain reputation and inspired a degree of confidence, then some society should relieve him of the burden of cost. His work is for the good of the whole and the entire dental body should assist in the expense to which he is necessarily involved in the solution of the problems undertaken. For this purpose each society should have a separate fund. A similar action to this was taken at the last meeting of the National Dental Association, and it is worthy of universal adoption.

The investigator must do his work in his own way. The matter to be solved is a problem, and a problem presupposes universal ignorance and hence no one can propose any method without, in a measure, impinging upon the right of original enquiry.

3. 'Should commissions be established and money furnished by state and national societies?'

Commissions are not usually productive of good results, for the reason that to secure the greatest benefit investigations must be individualized, for otherwise their value may be altogether destroyed by a lack of centralization of ideas.

In the end the work of a commission is usually done by the separate effort of one or two men. The money, in my opinion, will be more satisfactorily used if given by state or national organizations through a committee with supervisory powers over individual efforts. Yours truly, JAMES TRUMAN."

Dr. W. D. Miller of Berlin, whose work in pure science has done much to place our profession on a high plane among the learned professions, answers the question, "Should each individual worker pay his own expenses, and do his own work in his own way?" thus, "Yes, but assistance rendered such workers is always very welcome and desirable."

To the question, "Should commissions be established and money furnished," etc., Dr. Miller says, "That is all right, so far as the money is concerned, but such commissions should not be allowed to hamper the private worker by imposing any restrictions upon his perfect freedom."

With regard to the idea of a court to weigh evidence, give rulings, etc., Dr. Miller says, "I have very little faith in such a commission, if it did not consist of trained workers it would probably make a frightful mess of things."

Our esteemed president, Dr. John I. Hart, writes briefly thus:

"I think the ideal conditions would be to have in each large city a laboratory where men might delve and experiment as free lances; to select from these workers those who gave evidence of special ability, to work out definite problems. I think the laboratories should be supported by the state and the individual investigator into special problems should be selected by a committee of the National Association and the individual should have recompense from the national body.

I think this would be an equitable division of the expense, it would do away with the necessity of two or more individuals duplicating each other's labors, and would keep men in training all the time to take up problems that are constantly presenting themselves and might be the means of solving for all time some of present disputed ones. Cordially yours, JOHN I. HART."

Dr. J. Nutting Farrar, whose great work in orthodontia will always stand pre-eminent, expresses himself as follows:

"You ask the broad question: Should a commission be chosen and paid for solving professional problems, or would it be better for individuals, as individuals, to do such work.

In my studies (largely devoted to scientific lines) I have found that the greatest progress made has been through individual efforts and *not* by commissions. While I say this, I do not wish to be misunderstood in regard to commissions, which are of the greatest value in political and military matters, and in adjusting some of the mixed questions of the day, but in scientific lines pertaining to medicine, and its various branches, and even in digging into any of the more or less obscure problems of matter and its bearings upon life, their relations and consequences; the individual has always been the "wheel" that has led to the greatest developments for moving the world of thought, especially when marshaled by natural-born "generalizers," such as Spenser, Huxley, Mills and Darwin. Great minds work the best alone in their specialties, and their results are also best generalized and rounded into the great whole by the generalizer himself.

These facts, and combinations of facts, may be of great benefit to any profession, or its branches, by open debates in societies and conventions, but seldom are they satisfactorily settled there. Regarding expenses, I have always thought that when a mind has been found that has great faculty for diving deeply into any line of valuable treasure yet unsolved, that mind should not be prevented from accomplishing its purpose by financial hamper. Scientific minds are seldom great in financial lines, and often nothing at all, and therefore as their labors are for the general good, it should be seen that there be no hamper in the path of such great thinkers. I long to see some way established by which these few minds, born fitted to (disinterestedly) work out the hidden and undeveloped mines in the various phenomena of creation, may feel free from vexations consequent to physical support, called the "bread and cheese" necessity. While commissions and committees have their value, I do not see how such bodies are to be selected from great scientific minds who are peculiarly averse to public positions through modesty. Very respectfully,

J. N. FARRAR."

Dr. S. B. Palmer, for whom we all have the most profound respect and who has honored this society by his helpful presence for so many years, sends us the following:

"The answer to your questions relating to the appointment of a commission, whereby to establish a more uniform dental practice, calls for discussion from two distinct phases of the subject.

First, the object seems to be to improve practice, which, if done effectually, must be done upon a scientific basis.

As this appears upon the surface, the idea of a commission or appointment of judges is right and commendable. But the present accepted definition of dental science is so restricted and physically defined as to admit of no investigation or discovery that cannot be demonstrated by experiments, or recorded in tables satisfactory to the senses.

This limitation has often been cited within the last decade, in discussions relative to evolution in science, which embraces what has recently been called the "chemistry of organized life," claiming that neuroses is a disease that affects the condition of rendering them more susceptible to caries at various periods.

It is evident that dental science is on the eve of evolution. As the present teaching and general belief gives expression it would be a menace to evolution in this one particular to appoint a commission. It might be difficult to find half a dozen leading minds who would care to investigate such claims; such has been the history in past years. In this particular a commission would not get at the facts needed. Dental practice is constantly changing, and most of the beneficial ideas came from individuals who knew best how to develop and introduce these productions to practice. Better results are obtained by individual thinking, than by giving over immature conceptions to other minds, to mould into forms according to their ideas.

A commission would report what in its judgment would best promote practice. Possibly some valuable facts might be left out.

There would be less stimulant to young men to act independently. Unification in practice would soon establish boundary lines as arbitrarily as those observed by denominational church creeds.

Progress in operative dentistry is conducted upon thought and perseverance. Elements of this nature are neutralized when they are compounded with those differing from them.

Quite unlike stock investments, where each dollar retains its value, I think it would be better to invite all to bring forward the scattered facts and present them to a commission of the whole that each might judge individually, rather than to have any facts cast aside by appointed judges who might conscientiously deem them unworthy of discussion. Science in practice will be advanced by stimulating individual thought and action, both to present new truths and to educate minds to receive them. Very truly,

S. B. PALMER."

Dr. J. Foster Flagg, the leader of the "New Departure Corps," answers the questions thus:

"I do not know that anything I could even give suggestively would help you in the least. 'What methods are best to solve the problems?' Ans.: The Lord only knows.

Should each worker pay his own expenses, etc.? Ans.: That is the way I have done.

Should commissions be established and money furnished?

Why not?

Would the profession be advanced by a court of rulings? I think the bench would be six guilty and six not guilty on every method, for I do not know of *one* practice or *one* method the value of which cannot easily be decided by clinical experience, and yet the *opinion* as to "worthy" or "unworthy" is quite equally balanced.

What are we going to do about it? Isn't that Yankee? as I am answering your questions by asking another? Thine hopefully,

J. FOSTER FLAGG."

Dr. Eugene S. Talbot, the well-known writer and original investigator, writes as follows:

"In answer to your questions, I shall simply deal with historical results. Where science is free and untrammeled by government or social conditions it has done the best work.

In medicine, in geology, biology and in pathology, enthusiastic individual workers carefully trained, have at their own expense added most to advance. Commissions established by the state have always given extremely misleading results, which require rigid critical analysis since matter extraneous to science have dominated their work. The prize essay system has seriously damaged science, since social and college clique elements have crowned the products of defective brains. The so-called judicial system in actual operation in the courts substitutes the dictum of an egotistic politician for the results of free discussion implied in the very name of science. Replacement of free discussion by a so-called judicial tribunal has always fossilized science. The inquisition was such a tribunal. Science is a matter of growth, and hence in it no disputed question can be settled by a ruling. An English clique of literati and sciolistic scientists, headed by a sciolistic pretender named Dr. Lardner, made themselves judges of all disputed questions in science and attempted to prove that steam navigation was impossible. The encyclopædia published by this clique had hardly issued from the press when the first steamship reached the shores of America. Commissions, judicial or otherwise, would simply repeat this blunder. Very truly,

E. S. Talbot."

Dr. F. W. Low of Buffalo, to whom we are indebted for much good work along bacteriological lines, gives his ideas as follows:

"Besides 'the many problems now before the profession' new ones are arising every year. Those that a competent committee of the National Dental Association may elect to investigate first, should be by them turned over to a single investigator known by them to be a worker by exact methods and to be possessed of superior knowledge, say of chemistry, bacteriology, or of applied physics, as the problem to be solved may require. A *liberal allowance* both for time and expense should be made. It would not be safe to let every theorist feel that he could make investigations and then ask for reimbursement, therefore the man who begins should *pay his own expense.*

The expense borne by the National Dental Association should be only for investigations to verify or disprove the discoverer's claim.

I speak somewhat as one having had experience. My investigations regarding dental instrument and dental instrument case sterilization by formaldehyde fumigation, which you commented upon in your report as chairman of the committee on practice last year, cost me $90.00, and recently in order to qualify myself to speak before the Buffalo Dental Association on the same subject, I paid for culture tubes something over $7.00 more, but the man who is securely mounted on his favorite hobby will not stop for such small considerations, and he ought to feel satisfied when he has 'thrown down the gauntlet to the dental world,' *if,* with its taking up, his burden ceases.

Concerning your third question, I am so much in doubt that I will not attempt to answer. Very sincerely, Frank W. Low."

Our esteemed Vice President, Dr. R. H. Hofheinz, has sent the following:

"It is difficult to answer all your questions separately and not to resort to a possible repetition.

It has been my view for years, and it is so recorded in the minutes of the state society, that the dental society should create a fund, the income therefor to be used for scientific investigations.

True it is that the eminent investigators of the past have paid their own expenses. Equally true it is that the remuneration for their labor was extremely small. It is also true that the present time has very few original workers in the field of dental science. It is not because all scientific questions in dentistry are solved to our satisfaction, nor is it because we have not men of the necessary intellectual qualifications.

The time in which we live does not only demand results of our labor, but it demands substantial results.

The investigator in the chemical laboratory, the inventor in the electric shop, receives a probable compensation for his achievements, which serves as a great stimulant aside from the innate desire.

What does the dental investigator receive? The thanks of posterity.

I do not desire to be misunderstood. I do not wish to say that no scientific investigations can be made without a bank check in sight. Alas, poor science, if that were true.

The great achievements of our original investigators have not yielded them anything commensurate for the time they spent, nor any equivalent for the general good the profession has received.

The dental profession is an ungrateful profession in this respect, and I apprehend that many minds and hands remain bound to the grinding stone for that reason, instead of using their Promethean spark for the enlightenment of the profession at large.

If the dental profession would create a fund, select a body of able men, who again would choose the proper workers for their respective fields, I believe that a great many scientifically able men would gladly lay aside their operating instruments, which mean to them bread and butter, and throw their soul and energy where by natural aptitude and destination it should always have been.

Our investigators would then be in the enviable position that the famous chemist Bunsen was in, when he invented the Bunsen burner. His friends told him that it might bring him millions. With his child-like smile he answered: 'My inventions belong to the people, the state pays for my work.' Yours truly,

R. H. HOFHEINZ."

The last letter which I have to present to you is from the pen of that well-known author and clear thinker, Dr. C. N. Johnson, of Chicago:

"Replying in brief to your questions I will say that while in the past most of our advance in the way of research has been made through the medium of the individual worker and at his own expense—except in so far as recompense has come from the payment for articles along original lines in our most progressive dental journals—yet it would seem high time for the experiment to be made of having commissions appointed for the investigation of disputed questions, and these paid by contributions from the state and national societies.

It has been proved beyond question that we cannot look with any degree of hope upon a plan to raise money for original research by popular subscriptions among the professions. Such an idea was suggested a few years ago by a writer in a prominent journal, but the matter fell almost literally flat. I very well remember having written the editor at the time signifying my desire to be placed with those who would contribute to such a fund, and having heard from him subsequently that he had received one other communication of a similar character. This does not imply that the entire profession are illiberal, but that such a plan does not appeal to them. The proper function of society funds outside of the expense accounts would seem to be the development of scientific research, and there are assuredly many questions in dentistry to-day which need solving, and which lacking solution, must leave the profession to that degree disgraced.

I have said that it was time to try the *experiment* of submitting these questions to commissions, by which I mean to imply that to my mind it will prove an experiment, and I am not at all certain that even if commissions are appointed they will be more effective than have individual workers following their own bent.

The whole secret in scientific research lies in individual enthusiasm in looking for facts, coupled with the persistence to plod: and these are qualities which must be inherent in the investigator and which are not likely to be found existing uniformly in any commission—nor can they be imparted to a commission.

But I still think the experiment worth trying.

The idea of establishing a court for the unification of practice, composed of eminent men in the profession, together with men having judicial minds outside of it, would seem to me to be wholly impracticable. A man may be an able jurist and renowned for his breadth of intellect, and yet, without a special training which such a man could not afford to submit to, he would be totally unqualified to sit in judgment upon a matter pertaining to dental practice. We need judicial minds in dentistry, but it will be more potent and profitable to develop this quality among our own profession than to attempt to develop dental discrimination in men outside of it. Yours fraternally, C. N. JOHNSON."

This, Mr. President, completes our list of letters. Please allow a few suggestions from your correspondent.

It is hardly possible to sum up the preceding papers, but nearly all agree that the time is ripe to supplement unaided individual effort by organized effort of some kind. Just what that kind will be is hard to determine at present.

Our idea is to commence. Do the thing that we can do, and that we are sure is right, *now*, and from that beginning will grow a system sufficient for our needs.

Let us commence by employing an analytical chemist, whose services will be controlled by a committee chosen by this society; the committee and the chemist to stand in the same relation to the society as the law committee and its attorney do now.

The committee, by keeping accurate records, could prevent duplicate work, and by using good judgment could, at not very large expense, acquire facts about filling materials, mouth washes, dentifrices, etc., which we ought to know for obvious reasons.

The next year a bacteriologist might be added, and the scope of the committee enlarged; and so on until we had secured a committee with the necessary expert helpers to undertake work of a more intricate nature.

The time has gone by when one man can know everything, and the time has come when we must rely upon experts, each in his particular field.

There is no dentist who makes his living by operative work who knows more than the rudiments of chemistry.

It is impossible for him to do both and work at the chair day after day.

If a dentist undertakes to do both, either one or the other must suffer.

Dr. Kirk said last year that he would not have much faith in the results of work done for a pecuniary reward. I would have less faith in the accuracy of work done at night (after a long day of tedious and nerve-trying dental operating) with a few poor home-made appliances.

Because a man takes pay for what he does it does not necessarily follow that he does the work *for the pay.*

It is not a question of whether a man *ought* to work for nothing, but rather of whether he *can* work for nothing.

I was so fortunate as to be associated with a dentist who spent his nights, his Sundays and his holidays working at bacteriology and microscopy.

After four years of such work he told me that he had done just enough to find out that one could know nothing of bacteriology unless he spent his entire time at it.

And so we may say that the time has gone by when a dentist of ordinary means (and he would not be a dentist if he were possessed of great wealth) can accomplish much in the way of scientific work without financial aid.

Let each of the more progressive state societies undertake some work, each knowing what the other is doing, and all report to the national society.

There might be appointed by that society a committee or commission, who would undertake to codify and correlate the facts, making them stand in their proper relation to each other, for facts are not science until so related and codified.

Again, every important work done by the individual worker should be gone over carefully, not only as to details and methods, but the *conclusions* also, for these are apt to be most at fault, and we are sorry to say, are apt to be the only part of the published work which is read.

Not every phenomena following a given incident was caused by that incident.

The following squib, clipped from the *Chicago Tribune,* illustrates this admirably:

"Eminent foreign scientists have found out that a grasshopper's ears are in its legs."

"How did they ascertain that?"

"They put a 'hopper' on a board and tapped the board gently."

"Well?"

"The creature hopped away. Then they cut off its legs, put it on the board again, and tapped the board as before, and it didn't hop away. It couldn't hear the tap, you see."

"Gosh, what a wonderful thing science is?"

This, Mr. President, is our report. It is submitted hoping that it will bear some fruit other than mere discussion.

SURGICAL TREATMENT OF CLEFT PALATE IN RELATION TO SPEECH.*

BY GEORGE V. I. BROWN, A. B., D. D. S., M. D., C. M., MILWAUKEE, WIS.

Discussion of the two subjects, health and speech, in relation to correction of cleft palate deformities necessarily includes the entire subject for the purpose of every treatment, whether surgical or prosthetic, contemplates at least an improvement in these respects.

The general health of patients afflicted with such malformations presents a clinical aspect under two natural divisions.

First: In the periods of infancy and early childhood, when the difficulty of proper nourishment is sometimes so great as to be a menace to life itself, and always a factor of greater or less degree in retarding development.

Secondly: In adult life when catarrhal condition of the nasopharynx due to unusual exposure of its mucous membrane lining, to oral secretions and other irritants, cause the usual train of associated symptoms manifest in related parts to which diseased conditions are readily communicated by reason of continuity of the mucous membrane surfaces with those of the nasal, pharyngeal, and oral cavities, also affecting in many instances the nervous and circulatory systems.

It would seem to be self-evident, to all who are familiar with these cases, that any procedure, however radical, which might remove this menace to the healthfulness of the affected individual would be warranted in view of its urgent necessity, and no extended discussion ought to be required to make clear the fact that with all due respect for the great benefits that have been accomplished by prosthetic assistance in the form of mechanical substitutes, it is altogether better and more healthful to have the parts restored with living tissue if such a result can be obtained.

This may also be said to be true with regard to speech, except that more requirements are indispensable to correct articulation, because not only is it necessary for the clefts in both hard and soft palates to be covered with tissue, but also that the tissue itself be susceptible to muscular control and sufficiently flexible to allow movement necessary to perfect performance of the mechanism of sounding vowels and consonants in such manner as to make distinct words in speech, and yet one thing more not to be forgotten, the ear must be trained to detect the proper sound.

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*Read before the annual meeting of the New York State Dental Society.

Bearing in mind these facts, a perusal of literature, old and new, makes clear the fact that the most needed thing at the present time is a correct classification of cases with regard to their proper surgical treatment.

Making the speech the standard, we find it necessary at the outset to recognize two general classes, congenital and acquired.

The reasons for this are obvious, because in acquired cases the vocal sounds are only injured to the extent of the lost usefulness of the part which, if overcome, allows a return of former ability to speak clearly, but persons born with the parts imperfect are unable to successfully use them when corrected until they learn to do so.

Acquired cases may be subdivided according to the etiologic factor which may be disease or accident—the former usually contraindicating operation, especially with syphilis by reason of the fear of extending rather than closing the opening, the surrounding tissue being subjected to the constitutional condition, and therefore prone to slough rather than to unite.

In treatment these may be again subdivided into openings through the hard palate alone, due to the necrosis of the bony structure—or loss of portion of the soft palate—since a plate readily covers the former and gives no serious inconvenience to the wearer, making operation unnecessary, whereas if speech be impaired through destruction of the soft palate a staphylorrphy might be undertaken under cover of constitutional treatment, the risk being warranted by the necessity.

It is in the differentiation which shall give us a proper classification of congenital cases that we find real perplexity, because of the widely divergent views of those writers whose opinions are entitled to be considered valuable, but for practical purposes it seems best to distinguish between the different forms of deformity and age at time of operation, since these are the important considerations which must govern the surgeon's method of procedure.

Cleft in soft palate with hard palate normal.

Single cleft extending through both hard and soft palates.

Double cleft either bifurcating from a single one and separating the intermaxillary bone, or two clefts, involving both hard and soft palates.

Continuing this classification from an operative standpoint based upon age we classify as follows:

First, infants whose cases by reason of malnutrition, due to the inability to take proper nourishment, demand that their mouths be immediately put into a better form, it then being a matter of necessity to operate, and the best time for such being in the early months of infancy, according to Dr. Brophy's method.

Second, cleft in both hard and soft palates at the age of eight to ten months old.

Third, after the deciduous teeth have erupted, but before the habit of speech has become fully formed.

Fourth, older children.

Fifth, adults whose permanent teeth have erupted.

This classification is all important in relation to the possibilities of securing the best possible speech as a result of operation. Unquestionably when an operation can be performed in the early months of infancy, which will successfully close the openings in both hard and soft palate and correct the deformities, no difficulty in speech might be anticipated, providing the circumstances were such as to admit of a perfect result. This then would be the most desirable from a standpoint of speech alone, but the question as to whether the gravity of danger of early operation is not such as to give good reasons for hesitation on the part of the surgeon, when surgeons everywhere agree that infants bear the loss of blood badly and that the death rate after operation of any serious nature is always very high, is one that cannot be lightly cast aside. Fifty per cent, according to Ehrmann, is the death rate of infants, while Schede, Wolff, Fowler (Dennis System of Surgery) all state that the best time is from five to eight or ten, or even twelve years old.

My own experience seems to warrant these statements, at least in regard to operations earlier than three or four months. It is true that infants take chloroform with comparatively little danger. Moreover the shock is less than would probably ensue in older patients, because they apprehend no danger, but it takes so very little to upset the digestive apparatus in infancy that the difficulty in keeping up nourishment sufficiently to restore a loss of the vitality due to hemorrhage and to continue to maintain a proper degree of healthfulness is very great. The crying and fretting of the little ones has a tendency to disturb more favorable conditions. Swallowing bacteria from the wound surface usually affects the entire digestive tract so greatly that even after nourishment has been maintained per rectum until the irritation resulting prevents its successful continuance, it frequently occurs through want of vital activity the stomach and intestinal tract still refuse to perform the office of digestion and the prognosis becomes a very grave one indeed. By delaying operation until the age of the second division at eight to ten or twelve months, wires can be adjusted directly through both sides of the jaws so tightly by fastening to the metal plates on buttons that the two lateral portions are drawn together considerably, and by twisting the wires in the mouth with a pair of forceps from day to day the fissure can be gradually narrowed. It is usually the case that one side of the jaw is much higher or more forward than the other, giving an unevenness to the face. This can be corrected by wiring as described, and when the cleft has been sufficiently narrowed and the two lateral portions of the jaws appear in perfect line, operation upon the lip can be performed with perfect safety and with assurance that a much better result will be obtained than would have been had it been operated on before the jaws had been properly adjusted. The narrowing of the fissure is continued by the living muscles, after the operation has brought them play. It will still be a year or more before the child begins to talk much, and during that time it is gaining strength and power of resistance so that operation for the complete correction of the deformity may usually be safely performed before he has begun to talk at all. In the next class, with the deciduous teeth in place, an orthodontia appliance, attached by cement to the teeth on each side, can be turned a little from day to day, and the intervening space so narrowed that operation is not only simplified, but much more likely to be permanently useful and successful than if it had happened that operation was demanded at an earlier age. The last class mentioned implies the correction by surgical operation and a method that I believe was first adopted by myself and described before the section of stomatology of the American Medical Association and the National Dental Association two years ago, which, by adopting the principles employed by dentists in the correction of irregularities of the dental arch and by orthopedic surgeons in malformations of other bones, has made possible surgical treatment of deformities that by other methods would have been considered unfit for operation, because in this way it is possible to narrow the arch at least the width of a molar tooth, thus allowing the upper teeth to occlude with buccal cusps inside instead of outside of the molars of the lower jaws, as in the narrowed occlusion. This can be done without impairing the usefulness of the jaws for mastication, and the width of a broad molar crown taken out of even the widest cleft of the palate will leave it so narrow that operation immediately becomes a practical possibility. Thus we are able to say that no case could present itself which would absolutely demand the application of a prosthetic appliance. It naturally follows that having thus supplied a covering for the roof of the mouth of living, healthful tissue, and the same for the soft palate, that a marked improvement in speech would be expected, yet this is not so, and the question as to "why it is not so" embodies in itself the purpose of this paper. It seems to me that while flexibility of the velum after operation and the absence therefrom of scars with cicatricial tissue to stiffen and to interfere with the muscular movements are desirable, even indispensable, for its perfect vocal assistance, the real reason why the speech of adults improves so little is the same reason an American finds it difficult to speak French or German or other languages, and when he does so, thinks the sounds that he makes the same as those made by natives in pronouncing the same words, for he is conscious of no distinguishing difference, whereas differences do exist in a marked degree and are quite noticeable to other people. There are several elements in the explanation of this fact that are worthy of consideration, and lead us directly to a study of the mechanism of speech. To get perfect speech as a result of palate operation we must first of all supply tissue, which will serve to prevent the nasal sound by shutting off the nasal passages. Second, the ear must become so trained as to distinguish readily incorrect sounds in the pronunciation of words. Third, the brain centers which receive the impressions that excite sound vibrations must carry to the motor centers messages that will set the right muscles in action in the right way. Invariably with older patients it is found that efforts to speak in spite of cleft palate deformity have caused the greater development of muscles, the application of which are usually a hindrance instead of a benefit.

The so-called area of speech as commonly conceded involves something more than a distinctly outlined portion of the brain structure, but in a general way it may be understood that in and about the sylvian fissure, the third frontal convolution, the Rolandic area and that particular portion known as Brocas convolution, the various psycho-motor centers necessary to vocalization are located, and a consideration of the association of these parts to each other will convince the careful reasoner that in the correction of these oral deformities there are many difficulties to be considered beside merely the task of securing an adjustable veil, which will serve to close or open certain air passages during the act of speech as in the normal individual. A study of the brain structure and of the principles upon which modern brain surgery is based, proven over and over again through experiments upon lower animals and by clinical experience in the study of aphasia and other affections of speech due to diseased conditions, makes clear the fact that the perfect formation of words and their construction into intelligent sentences requires the co-operation of a number of the distinctly different nerve centers.

The first cry of a child is merely a sound caused by reflex action of the muscles without any guiding influence exerted by the faculty of reason; this is followed by the first efforts of sound to represent intelligent words as objects begin to be recognized, and gradually this is continued and extended until expression of ideas in speech has become possible. It will readily be understood that if these efforts have been upon normal or correct lines, the muscular activity necessary to sound producing must have been guided by the proper nerve centers, which will have caused an increase in the brain development of those centers, and the messages sent from the motor tracts to the muscles which are concerned in the utterance of words will be in all respects correct, therefore the habit of proper speech will have become an established fact; but, on the other hand, if a deformity has existed from birth, by reason of which the normal use of certain muscles will have been greatly restricted and the use of the certain other muscles not commonly used in the process of word enunciating have received more stimulation than would have been the case had there been a perfectly formed mouth and throat, the result must invariably be an increased development of the nerve centers which are injurious to speech, with a faulty development of those that are necessary to perfect speech. This would be termed a habit, but the word habit conveys too restricted an idea of the condition. For example, when the eye through its retinal image registers upon the brain structures the particular nerve stimulations which in time shall become associated with the name of an object, its form, record is established by what may be known as the visual memory centers. In the same manner the sound of the name of the subject through vibrations of the auditory nerves and organs of hearing becomes fixed in the auditory memory centers. Precisely also are the somæsthetic areas affected by the tactile sense, and memory of the sense of touch as well as taste, smell or other stimulus that may have been excited by or associated with any particular object, and when the sensorium takes consciousness of this object the name of which has become known to it, there is required the co-ordination between these different memory centers in order that the proper message may be sent to the motor centers through which certain muscles may be set in motion in proper manner to produce the sound which may be clearly recognized as the spoken name of the object.

It is known that in speech the muscles of the chest, which are responsible for expiration, the muscles that raise and lower the larynx, those that tighten the vocal cords and tip the hyoid bone, as well as resounding properties due to the nearness of the spinal column, and the co-operation of the forces that are applied in raising and lowering the soft palate, the adjustment of the tongue, proper action of the muscles of the cheeks and lips are necessary for the utterance of even a single word. If, therefore, during the life of the individual through faulty operation, or adverse action of these agencies, wrong messages have been constantly sent, to any portion of the brain concerned in making a certain sound, and if the auditory memory centers have registered by constant hearing imperfect sounds, for specific words, which will accordingly have caused the development of brain structure, which is all active against correct speech, and if there be an insufficient development of those centers which are needed for perfect speech, how great becomes the difficulty of giving a speech power to individuals in face of all these acquired disadvantages.

It is too narrow in view of his own special portion of the sound-making apparatus that has so limited the oral surgeon in his consideration of this subject in the treatment of cleft palate. There has been laid down the absolute necessity of having a soft palate which will be capable of entirely excluding the passage of air to the posterior nares, thus to overcome nasal tones, but a well-known writer has recently stated that this is a false idea, since there are many times in speaking and singing, during which the passage of air through the nares is not excluded, and yet no nasal tone is noticeable.

As a matter of fact, both the quality and tone are largely decided before the sound wave has reached the soft palate at all.

Practical examples of the truth of these theoretical principles are shown by the following illustrations, which show photographs of the patients and casts of their mouths before and after operation:

Figure 1. *The cleft was confined to the soft palate alone.

Figure 2 shows a very large cleft extending through both hard and soft palates. Both these patients are girls about the same age. Yet it will be noticed by the graphophone record that the speech of No. —, with a much greater deformity, is somewhat clearer than No. —, with a lesser opening in the palate. This is particularly interesting because an unusual development of the muscles that raise the tongue and constrictors of the pharynx had enabled No. 2 to force the back of the tongue up into the cleft and narrow the pharyngeal opening so as to overcome in a measure at least the deficiency, but the unusual muscular action will undoubtedly militate against success after operation. No. 1 having been given almost a perfect velum, one quite flexible and free from the thickening of scar tissue, while much improved in ordinary conversation retains a good deal of the characteristic disagreeable vocal sounds, and when excited becomes almost unintelligible, yet when reciting a little piece that I have recently taught her to say properly, the involuntary office of wrong auditory and memories being by effort excluded, it will be noticed from the phonographic record that even at sixteen years of age and only a few weeks after operation it is possible with a little care to get nearly perfect vocalization.

A summary of conclusions from the foregoing would be as follows:

First, the risk of operation in early infancy is necessary except where vitality of the child is threatened by malformation.

Second, the most favorable time for operation is after the deciduous teeth have been erupted, but before habit of speech has been acquired.

Third, difficulty of acquiring correct methods of pronouncing words after operation in adult cases can only be overcome by careful mental training.

Fourth, there can be no cases which cannot be improved by treatment and operation, both with regard to health and speech, no matter what the age may be, providing the co-operation and assistance of the patient may be assured.

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*We were unable to procure the photographs.—EDITOR.

REPORT OF THE FOREIGN RELATIONS COMMITTEE OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES FOR THE YEAR 1900-1901.

(Reported and adopted at the eighteenth annual meeting held in Milwaukee, Wis., August, 1901.)

The past year has been an exceedingly active one for the Foreign Relations Committee, and the correspondence has been very large. We believe that the influence of the National Association of Dental Faculties has been materially extended during the year, and the good work that has been accomplished by it is becoming more widely known both at home and abroad.

The association has given its Foreign Relations Committee jurisdiction in all foreign educational affairs that affect its interests. This we do not understand to mean that we can dictate what shall be the foreign policy to be followed, but that the committee may advise during the interim between the sessions, reporting its action for approval or disapproval at each annual meeting. This does not in any way interfere with the duties of the Ad Interim Committee, as the authority of the latter has never embraced matters in foreign countries. At the last annual meeting the committee presented a partial schedule of equivalents to be given for attendance on foreign courses of study. The association accepted that and enacted that advanced standing in American schools should only be given foreign students in accordance therewith.

There is a rule of the association that any legislation vitally affecting the members shall not go into effect for one year. This is a wise restriction, for the announcements are usually issued before the time of our annual meeting, and enactments that might be in conflict with the terms legally offered to students could not well be enforced. Your committee found that some foreign students had already been accepted by schools, and consideration given to foreign instruction which might be in conflict with the new regulations. It was therefore deemed best not to give any rulings affecting the annual term for 1900-1901.

But many loyal schools, those whose governors were most anxious to improve the standard of American professional education, have referred all their foreign applications to the committee. In this way it has been learned that foreign students have asked for advanced standing because of attendance, in some instances, on schools that had no existence whatever. Certificates have been presented from countries which have no dental legislation, and in which there is no semblance of a dental educational institution. They usually emanate from some private practitioner whose office is made to assume a sounding title. In other cases they pretend to be granted by some teaching hospital which has no official status.

Your committee has discovered that it is usual for the possessors of such doubtful credentials to write to a considerable number of schools to learn which, if any, will accept their certificates, and to find out whether some institution will not offer a special inducement. Each dean is assured that others will receive the applicant if he does not. The result is that all of those to whom application has been made are duly informed of the qualifications of suspected students and the probable terms on which they were accepted if the name is found on the lists of any school.

By this it is readily perceived how deans of colleges have been deceived in the past, and how the character of our American schools has been made to suffer for things over which they had no control. The Foreign Relations Committee is prepared to recommend a rating for any foreign school that will submit its curriculum of study and its preliminary requirements of education. This must be approved by the association before becoming effective, and if our schools will govern themselves accordingly the old reproach that we give advanced standing on insufficient qualifications will be forever removed.

A very few schools have manifested some opposition to these regulations. Your committee has, even by some inconsiderate teachers, been accused of an attempt to dominate the colleges. We cannot conceive upon what grounds such a charge should be brought. The committee has done nothing save that which it was positively instructed to do. It has made no rules whatever. It has confined itself to recommending such legislation as it believed absolutely essential to the proper conduct of an educational institution, and if such recommendations have been given legislative enactment, it has tried to carry them into effect, but not otherwise. It has never exceeded its authority nor been unnecessarily aggressive in any of its proceedings. If there exists any reason for criticism of its action on other grounds than opposition to wholesome restraint and the desire to do that which of right ought not to be done, it will be very glad to have such instances pointed out, for its sole ambition has been to carry out the honest wishes of the parent body to which it is responsible.

FRAUDULENT DENTAL DEGREES.

Last year, at the request of the committee, it was relieved of the task of endeavoring to suppress illegal and fraudulent degree-granting institutions, but, as it was already identified with the work, we found that we could not detach ourselves from it entirely. Letters and complaints were persistently directed to us instead of to the Law Committee, to which the subject had been referred. Besides, the diplomas which were sold by the fraudulent schools, and the principal attendance upon those which had a legal existence, but which are unrecognized and unaccepted here, was chiefly in and from foreign countries. Hence its consideration properly belonged to the Foreign Relations Committee, and we could not well refuse to receive the complaints and do what we could in the premises. In our last report we made public the fact that a number of the fraudulent institutions were suppressed and their conductors imprisoned. We hoped that this would practically close up all of them, but special circumstances have intervened to protect certain ones, and the work is not yet completed.

It is not generally known in this country that thousands of fraudulent diplomas have been sold abroad. Were it possible for foreigners to distinguish between the reputable and the disreputable schools this would not so much matter, but the statutes of the state of Illinois, under which it is possible to incorporate degree-granting institutions which have practically no state supervision or responsibility whatever, and which with legal sanction are, under the great seal of the state, certified as lawfully organized colleges by the Secretary of State of Illinois, simply encourage the fraud. By that certification of the secretary of state the most unblushing impostures are placed apparently upon the same plane with reputable institutions, and foreigners are deprived of all means by which they can positively determine which is worthy recognition and which is not. As a consequence, some foreign governments have used this condition, either honestly or as a desirable pretext, to discriminate against all Americans, and have refused them permits to practice, and positively prohibited under heavy penalties the employment by any one of the American degree or title. This interdiction is spreading very fast, and, unless something is done to forestall it, soon the possession of an American diploma, whether legitimately or illegitimately obtained, will be a positive detriment to a practitioner. In fact, that is the case to-day in some parts of Germany. The influence of such enactments upon American educational affairs and upon the members of this association may perhaps be imagined. Already prohibition is practically accomplished in Southern Germany, is impending in Northern Germany, has been commenced in France, in Italy, and other countries, and there is sharply threatened a combination of all Europe against the American dental degree and the American dental school.

Much of this may, with a considerable degree of justice, be charged against the state of Illinois. Its own legislation has fostered the fraudulent schools that have brought this disgrace upon us. Its dental profession is not without responsibility. When has any body of its dentists put forth any special efforts to bring about a reform? The state has one of the best state dental societies in existence, with a large surplus in its treasury. For many years it has been a leader in thought, because within its membership has been found a great number of the very ablest men in dentistry; men who have done as much to advance dental practice as have any others. The papers read before that society have challenged the attention of the world. Many of the members must have known something of the opprobious professional legislation upon the statute-books. Not a voice has been raised in denunciation of the condition, not a word has been uttered, until at the last annual meeting a mild resolution deprecative of the infamous traffic was offered by one unconnected with either schools or boards.

The State Dental Examining Board of Illinois has practically recognized fraudulent and irregular colleges, schools either without any regular course of instruction or with but a very insufficient one, by admitting their students to the state examination and licensing them to practice, and by practically certifying to the regularity of institutions which every dentist in America knows, or should know, are conducted solely for whatever of revenue there may be in it. The law admits to the state examination for practice anyone who asks for it, and the State Board of Dental Examiners has given the known fraudulent institutions a quasi status by admitting those holding their purchased diplomas to the examination, passing them and giving them the certificate which makes of them regular and legal practitioners. This has been done under the law, but it is

Illinois law, and the profession of the state is doing nothing to bring about a reform that professional decency imperatively demands. It is time that the many high-toned professional men of the state were aroused to the stern accountability to which they are liable to be called.

In directing attention to this, your committee must, in justice to the profession of the state, urge that in the opinion of some it has not been wise to admit that which has a real existence, in the hope that the State Board of Health and the medical profession might without scandal succeed in bettering the condition. Surely it must be now apparent to every one that the great work demands the most earnest efforts of every honest dentist of the state. The excellent schools of Chicago have not hesitated to step into the breach when educational interests and professional progress were threatened by the action of other state examining boards. Why should they not attempt a reform in the state law under which their own board acts?*

Last year your committee was able to report that the worst of the fraudulent schools of Chicago had been closed and that their conductors were in prison. That which was done was to a large degree the work of the State Board of Health of Illinois, which brought suit under the United States laws that forbid the use of United States mails for fraudulent purposes. In no other way could the general government at Washington interfere, because in all educational matters each state is autonomous, that being one of the reserved interests not delegated to the general government. The Board of Health being a state institution, it could commence proceedings in the name of the state, and use state funds for the prosecution of the criminals. It has been appealed to by your committee to take up the fraudulent issue of dental degrees, but the following letter will show that it purposes to confine its labors to the suppression of the sale of medical diplomas:

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*Subsequent to the reading of this report at a meeting of the National Association of Dental Faculties, about three thousand dollars was raised within an hour for prosecution of the work of reform. The National Dental Association afterward appropriated one thousand dollars more. Before the close of the Milwaukee meetings, however, the Illinois dentists in attendance actively commenced the work on their own account, and within a week secured the appointment of a new State Dental Examining Board, while a part of the old board were placed under arrest for malfeasance in office, and for general fraudulent practices. Proceedings were also very promptly commenced to annul the charters of certain irregular or fraudulent schools, and the prospect is very encouraging for the entire removal of the reproach that has so long rested upon them, thus verifying the confident predictions of the committee, that when the profession of the state were fully awakened to the real condition it would without delay be purified as by fire.—B.

> State Board of Health, State of Illinois, Springfield.
> Office of the Secretary, July 13, 1901.
>
> *Dear Sir.*—Your letter of the 3d was received during my absence in the North. In regard to the sale of dental diplomas in Illinois, I cannot give you the letter you desire, for this board is taking no steps whatever to break up the traffic in these degrees. Through the efforts of this board the sale and barter of medical degrees has been entirely suppressed, and the persons who formerly made a business of selling degrees in medicine are now in jail.
>
> With the assistance of the governor of the state and a few medical men we succeeded in getting legislation passed in 1899 by means of which it is a very easy matter to summarily close up any institutions selling degrees in medicine, dentistry, or pharmacy. Under this law the notorious "Metropolitan Medical College" has been closed.
>
> There seems to be no reason why the State Board of Dentistry cannot take action in the matter of sale of dental degrees. If the board chooses it can suppress within two weeks the institutions the "diplomas" of which are sold in Munich or elsewhere. Why this board has taken no action on these lines I am unable to say. The State Board of Health sees no reason why it should assume duties which devolve upon another board. If any medical degrees are sold in this state, I am not aware of the fact. If proof of such sale be presented to this board, the institution or institutions in question can be closed within a month. Very truly yours,
>
> J. A. Eagan, *Secretary.*

It may thus be seen that we are thrown upon our own resources in the work of closing the institutions engaged in granting fraudulent or irregular dental degrees, and can look to the medical profession for no assistance. Your committee feels confident it can within a short time close up the last of the fraudulent schools, if a sufficient sum of money can be placed at our disposal, and we are so advised by very competent legal counsel. We are prepared to submit a plan of procedure to this association.

AMERICAN EDUCATIONAL AFFAIRS IN EUROPE.

During the past year professional events in Europe having relation to American educational affairs have crowded upon each other's heels in rapid succession. Partly as the result of the appointment of the Foreign Advisory Committees by the association, and more especially through the action of United States governmental agents abroad, an attempt has been made to stem the tide which is so unjustly setting against us in Europe. The papers relating to such action were promptly sent to your committee. We recognized the fact that the purification of the stream must commence at the fountain-head. Practically no fraudulent degrees are sold in America; the countries of Europe are the sea into which the foul tide empties, and the sweetening of the waters cannot be effected there. It is in this country that the remedy must be applied, and until a healthy public and professional sentiment can be evoked here nothing can be done. The condition has existed for years, and it is constantly growing worse. A pest-hole cannot be cleansed until it is uncovered. A festering wound must be laid open that access can be obtained to its foulest depths. The community must be convinced from whence an infection proceeds before it will abolish the source. Few dentists are aware of what exists in this country. Any man knows that when the honest intelligence of our profession is fully awakened to any enormity, it will move heaven and earth if necessary to put an end to it.

Your committee seized upon the opportunity of the presentation of the most damning proofs coming from official sources to show to the dentists of America what really existed in their midst. Nine out of ten of them had little conception of the condition. When your committee, in its annual report for the year 1898, presented at Omaha, in part laid bare the grossness of the traffic in dental diplomas, the statement was received with incredulity. When that report had been softened in some of its expressions because a part of the committee feared it was exaggerated, it was even then a matter of amazement, and in no place more so than in the state of Illinois. But when inquiry revealed the fact that the half had scarcely been told, the deepest indignation was expressed. All the best of the general educational institutions of the state combined to bring about reform. In their wrath and righteous exasperation they went before the legislature, and met with defeat, because their statements were disputed and their motives impugned by the men whom they attacked. They had no fully awakened public sentiment back of them. Very few were aware of the enormity of the fraud. Their facts were met by counterbalancing statements on the part of men whose honesty had not before been impeached; a flank movement was successfully maneuvered; they themselves were accused of improper motives, and the legislature refused to act. Then an attack was made through the United States courts, which were not under the influence of public opinion, and they succeeded in breaking up a part of the iniquity and in getting through an amendment to the law under which it is possible to annul the charter of an openly fraudulent college. But new charters were easily obtained by the same men, and the work was recommenced under another name. The snake at best was scotched, and not killed. The time for another awakening seemed ripe, and your committee applied to the Secretary of State of the United States at Washington for permission to publish the official reports made to it by Consul Worman, of Munich, Germany. We believed that such publication, under the high sanction of the United States government, of official documents would challenge the attention of American people and greatly tend to produce a public sentiment powerful enough to sweep the fraudulent colleges from the face of the earth. Will it be believed? —from high places came public criticisms and protests against any open attempt to break up the infamous traffic which had seriously involved the reputation of every American school!

The name of Consul Worman has been mentioned. Your committee believes that his efforts to rehabilitate the American degree in Europe have been, and promise to be, of the greatest benefit to dentistry, and his work should be sustained by every one. Your committee has not been able to give him all the assistance it desired, because it was this year without the credit upon the treasurer of the association that has been accorded it in the past, but it hopes that the good work may not be hindered by this obstacle in the future. Our national, our professional, our individual reputations are at stake. The good name of every member of this association is in the balance, and our vindication from a foul blot upon our professional escutcheon must not be a matter of indifference. To assume that this is in the interests of antagonistic foreign governments, that it is doing their dirty police work, is to attempt to cover up and apologize for and justify the villainy that is being done in our names; to assume complicity with the men who are trading on our good deeds, and who under cover of the high reputation of American dentistry, won by us, are endeavoring to foist upon foreign communities a counterfeit that must of necessity throw doubt upon the original.

FOREIGN DENTAL SCHOOLS.

In the face of the fact that a most determined effort is being made in some foreign countries to break down the reputation of

American dental schools, and to discredit all American professional education, and in the knowledge that not only are our courses refused any consideration, but sometimes made a pretext upon which to forbid Americans to enter upon practice, this association cannot be accused of illiberality or of professional narrowness should it decline to accept foreign qualifications as a sufficient warrant for practice in this country. There should be some kind of reciprocity in professional affairs, and Americans ought not to be expected to extend all the professional courtesies granted. And yet, exact justice might, in the minds of many, demand that, irrespective of what may be done to us, we should be forgiving, and in return for the buffetings that we receive humbly expose the other cheek to the smiting hand. That course is perhaps highly Christian, but it is not quite in accordance with the impulses of an ordinary human nature. The man or the school that does not have sufficient of self-respect to maintain inalienable rights can scarcely expect to receive the consideration which may be honestly due.

But were this the only reason to be urged against the unquestioned acceptance of all foreign qualifications, we might justly be called churlish and professionally illiberal were we to exclude any one who asked our recognition. America was the first to establish any system of dental education. It embraced a full course of instruction, the whole of which must be covered within the walls of a duly chartered institution devoted to dental instruction. It was provided that all work leading to our special degree must be done under the direct supervision of qualified and accepted teachers. Recognizing the prosthetic department as one of the most important in dental practice, we insisted that it must have a scientific basis, and not be a matter of mere empiricism. We established the principle that our students must be under the pupilage of one who was acquainted with mechanical laws, and that the teaching of physical science should not be entrusted to possible charlatans. The instructor in mechanics must be responsible to the authority which granted the diploma or certificate of qualification.

The opposite course was pursued in founding the dental system of education in some other countries. Recognizing that many skillful mechanics were outside the pale of the fully qualified men, they practically excluded prosthetics from the college curriculum, classed mere mechanical skill as handicrafture, and permitted its instruction to be received at the hands of irresponsible men. They established a system of apprenticeship which in a manner bound out the student to a dental mechanic, who should give him instruction in one of the most important departments of dentistry. It could not be expected that we should accept such instruction as the equivalent for our full college courses. This condition was the most embarrassing question that came before your committee in the attempt to establish a system of equivalents. Our schools refuse to give to an American student any advanced standing for time spent in the laboratory or office of a practitioner who has not teaching experience and responsibility. The matriculant may have passed years in a dental office, but he must join the freshman class on entering our colleges. Our diplomas or certificates are only granted upon the completion of a definite scholastic course. Occasionally some one has urged that merit and knowledge and skill should be recognized wherever found, and without reference to their source. But that is the very pretext urged by the fraudulent and short-term schools for the granting of their honors after an incomplete course, they themselves conducting the examination, and being the sole judges of that skill and merit.

Why American colleges or college men should desire to shorten the usual term is past comprehension, for it is prejudicial both to their education and their financial interests. A degree is granted as a reward for the completion of a full course. It is not a recognition of merit. No two men reap the same advantages from a given amount of instruction. One man graduates a skilled, dextrous practitioner, while another is much his inferior. But both have earned their diploma by having successfully completed a prescribed course of study. Many men in the profession do not comprehend this, and blame the schools because a graduate is not as clever and expert in his technical manipulation as the experienced practitioner. Our schools demand the successful completion of a definite course in mechanics. We cannot recognize the qualifications of any man who has not complied with a reasonable requirement that is demanded of our own graduates. We cannot accept the course of any school that does not require this, and your Foreign Relations Committee has not recommended as the equivalent for ours the certificates of any such schools. The most that we can do for those that accept the apprenticeship system as a part of their course is to give one year's advanced standing for the completion of a full and complete three or four years' pupilage with final graduation.

Under our present legislation it is illegal and irregular for any member of this association to admit to its senior class any student who has not at least the following qualification:

Successful completion of two full terms in a dental school *whose course has been accepted by this association as a full equivalent for its own*, and who shall by that school be recommended for such advanced standing.

Admission to the second or junior class of any of our schools can only be permitted to those who have one of the following qualifications:

(1) Successful completion of one full term in a dental school whose course has been accepted by this association as a full equivalent for its own courses, the student being by that school recommended for such advanced standing.

(2) Successful completion of the full course of some regular and duly accepted medical school, and graduation with the degree of Doctor of Medicine.

No partial courses are accepted, nor those spent in a school not fully and definitely recognized by this association. Surely we cannot grant more than this to those making application from foreign countries while denying it to our own people.

This principle has governed the Foreign Relations Committee in making its recommendations for the recognition of foreign schools. There have been urgent requests for such recognition, but your committee has not felt itself at liberty to recommend what is not granted to our own schools and people. If any foreign school will demonstrate that its curriculum of study is the full equivalent of our own, and that it has complied with the statute of minimum requirements established by this association at its last annual meeting, your committee will be prepared to examine its claims and to recommend such action to this association as the course of study seems to warrant.

Your committee, in conclusion, points with no ordinary pride to what has been accomplished within the past five years as the result of an attempt to regulate our relations with foreign schools and foreign students, and to the high professional ground on which we now stand. There should be no further complaints, on the one hand that we accept unqualified men from abroad, or on the other that foreigners can come here and, without going through the full course demanded of American students, carry off our honors and claim to be American dentists, the colleagues of those who have completed our full curriculum of a broad course of dental study.

The foreign advisory boards, appointed with the approval of this association, have proved to be useful auxiliaries in the carrying out of our system of education. In Europe they have completed an organization, and will henceforth work together in harmony. They must exercise an important and wide influence in educational affairs, and their action cannot but be for good. They will guard the interests of those holding the American degree, and help to prevent it from being unworthily conferred. Your committee has made some further appointments in countries heretofore unrepresented, which it reports for approval. It is very much to be desired that at each of our annual meetings representatives from these foreign advisory boards should be in attendance whenever possible, and we recommend the enactment of a standing resolution giving to such regular representatives a seat in our meetings with the usual privileges of the floor.

REPORT CONCERNING FOREIGN EQUIVALENTS AS AMENDED FOR THE YEAR 1901.

Were your committee to follow the precedent set by most foreign countries, no consideration would be given to their qualifications. Although America set an example to all the world in establishing a definite curriculum of instruction for dentists, in organizing schools for their theoretical and practical training, thereby erecting into a recognized profession or specialty that which previously was mainly empiricism and charlatanry, no official recognition of its special curriculum has ever been given by the dentists of foreign countries, although in great numbers they have attended our schools to obtain the advantages offered by that curriculum.

Your committee believes it to be neither fraternal, professional, nor just to adopt the same course, but thinks it both expedient and right to extend proper recognition to whatever can be received as an equivalent for our own courses. It must not be forgotten, however, that the system of dental instruction in Europe varies very widely from that of our special American schools. Instruction separate from that afforded by the medical schools or universities is very rare, and the practical training which forms a part of our curriculum is usually given by private preceptors. Your committee does not feel at liberty to recommend the acceptance of an oral and theoretical course as the equivalent for one including practical work. We cannot believe that the certificates of private and irresponsible practitioners can by us be accepted as any part of a college course, and hence we have given them little consideration.

Australia.

A very complete report from the various colonies of Australia and New Zealand has been made by the advisory board appointed for those countries. It would appear that in most of the colonies there is no dental legislation, but Victoria has lately secured a law analogous to that of England, and in Melbourne a dental school has been organized whose curriculum, from the partial syllabus furnished, seems to be a comparatively broad one. The institution has been but recently established, and your committee has been unable as yet positively to determine whether in all respects it complies with our minimum requirements. When this shall have been definitely determined, we shall be prepared to recommend to this body some proper action.

In the provinces of Western Australia and Tasmania no dental legislation has been secured.

There is a dental law in New Zealand, and the member of the advisory board from that province has furnished your committee with an abstract of it. There are no dental schools in the province.

Switzerland.

This is a republic analogous to our own country in some respects, the federal union being composed of separate cantons. There are some excellent universities which offer certain facilities for dental study, but their practical instruction, we believe, cannot be accepted as an equivalent for that offered by American dental colleges. Your committee recommends that holders of the Swiss national diploma be given one year's advanced standing in the schools of this association, but that no consideration be at present extended to holders of the cantonal qualifications.

Spain.

The Spanish requirements in medicine are very high, but your committee has not learned that there are any dental schools, or dental departments of universities, whose course of instruction can be accepted as the full equivalent for the instruction given in American dental colleges.

France.

In accordance with the recommendations of the advisory board for this country, your committee recommends as follows:

That one year's advanced standing be given to students possessing the French government diploma of "Chirurgien Dentiste" who have completed the three years' course in either the "Ecole Dentaire de Paris" or the "Ecole Odontotechnique," and that the same consideration be given the French diploma of Doctor of Medicine.

That in all cases the American preliminary examinations as to educational requirements be demanded, and that a sufficient acquaintance with the English language to enable the student to comprehend lectures be an essential.

Germany and Austria.

Your committee recommends that students speaking the English language, who have taken the full dental course in German or Austrian universities, be eligible for reception in the second-year classes of American dental colleges, provided it be shown that they have had at least two semesters of competent college instruction in practical laboratory and operative work.

Italy.

There are, we believe, no schools in Italy which have courses that can be accepted as equivalent to those of our American dental schools. The instruction given in the medical schools your committee believes to be too exclusively general in its character to form an acceptable course in dentistry for American students.

Holland and Belgium.

In these countries the title of dentist is obtained by passing a practical examination in the theory and practice of dentistry. There are no separate dental schools, and we are not sufficiently informed of the comprehensiveness of the syllabi of the universities to offer any recommendations concerning them.

Great Britain.

Your committee recommends that all students who shall have finished the complete course in any recognized English, Irish, or Scotch dental school or hospital, shall be eligible for reception as second-year students in American dental colleges upon proof of their having taken as a part of such foreign course two years of instruction in a properly equipped dental laboratory and dental infirmary connected or affiliated with such dental school or hospital, and which requires the successful completion of the work deemed essential by recognized American schools, as formulated in the minimum requirements for foreign dental schools accompanying this report. We further recommend that for the present no consideration be given to partial courses in any of the dental schools of Great Britain.

Denmark, Sweden, and Norway.

Sweden has one dental school, which is the dental department of the Caroline Medico-Chirurgical Institute of Stockholm. Instruction is given by five professors of the medical department, and there are three dental professors, occupying respectively the chairs of dental surgery, operative dentistry, and dental prosthetics and orthodontia. From the assurances given, your committee believes that its graduates should be permitted to enter the second-year class of recognized American dental colleges, provided they shall have complied with our requirements concerning mechanical laboratory work.

Your committee has not sufficient knowledge concerning any school in Denmark or Norway to warrant further recommendations at present.

Japan.

There is one dental school in Japan. It confers no degree, but gives a certificate which entitles the holder to government examination, the same as if he had studied with some practicing dentist. As the instruction is personal and the school is quite irresponsible, your committee believes that no consideration can be given to those completing its courses.

Mexico.

There is a medical school in the City of Mexico which purports to give dental instruction. Your committee cannot learn that it is of such a character as will enable it to be accepted as the equivalent for a course in an American dental college.

Canada.

There is but one school in the Dominion, so far as your committee is aware, whose courses can be accepted as an equivalent for those of our own colleges, and that is at present a member of this body, so that it requires no special ruling.

Other Foreign Countries.

Concerning the educational status of other nations, your committee is not in possession of sufficiently definite information to warrant any action whatever. We have no knowledge of the existence of any courses of instruction which can be accepted as an equivalent for the courses in the institutions having membership in this body, and therefore advanced standing in our schools cannot in justice to our own students be granted save in the instances above enumerated.

REPORT CONCERNING MINIMUM REQUIREMENTS.

That a proper standard may be adopted by which the relative value of the courses in foreign dental schools whose students offer them as equivalents for a part of the instruction given in the colleges of this association may be determined, your committee recommends the approval of the following as the minimum of requirements demanded:

1. The college must require of matriculants a preliminary education which is the full equivalent of that demanded by the schools of this association.

2. The college must demand of students full attendance upon at least three full annual courses (not semesters) of lectures of not less than seven calendar months each in separate years, covering all the studies proper to a full dental curriculum.

3. The college must possess a bacteriological laboratory, with sufficient of equipment for instruction in a competent course in bacteriology, which must form a part of its curriculum of study.

4. The same must be required in chemistry, histology, and pathology.

5. There must be a technic laboratory in which shall be taught the proper manipulation for the insertion of all kinds of fillings for teeth, the preparation and filling of the roots of teeth, the tempering and shaping of instruments, the drawing of wire and tubing for cases in orthodontia, and the cutting of bolts and nuts.

6. There must be prosthetic laboratories sufficiently equipped for teaching all kinds of prosthetic work, and the construction of all the approved prosthetic appliances.

7. There must be a sufficiently equipped laboratory for instruction in making crowns and bridges and the construction of appliances used in orthodontia.

8. There must be a properly equipped infirmary or surgery for the reception of patients, upon whom each and every student shall be required individually to perform all and enough of the operations necessary in dental practice thoroughly to qualify him for the successful pursuance of his profession.

9. Complete records of the work done by each student, of his attainments at sufficient and full examination in each subject of the curriculum of study, of his attendance and deportment during the course, must be permanently kept.

10. No credit must be allowed for any work not done under the immediate supervision of instructors connected with or especially approved by the college, and who are in direct affiliation with the faculty.

FOREIGN ADVISORY BOARDS.

The following is a list of the countries for which advisory boards have been designated, and the appointments and nominations so far as made:

Country.	Name.	College.	PostOfficeAddress
Great Britain.	Wm. Mitchell, D. D. S.	Univ. of Michigan.	39 Upper Brook St., London, England.
" "	W. E. Royce, D. D. S.	Phila. Dental Coll.	2 Lonsdale Gardens, Tunbridge Wells, England.
" "	B. J. Bonnell, D. D. S.	....	94 Cornwall Gardens, So. Kensington, London.
Holland and Belgium.	J. E. Grevers, D. D. S.	....	13 Oude Turfmarkt, Amsterdam, Holland.
" "	Ed. Rosenthal, D.D.S.	Harvard Univ.	19 Boul. du Regent, Brussels, Belgium.
" "	C. Vander Hoeven, D. D. S.	....	Der Haag.
Denmark, Swe. & Nor'y	Elof Forberg, D.D.S.	Phila. Dental Coll.	Sturegatan, 24 Stockholm, Sweden.
" " "	S. S. Andersen, D.D.S.	Univ. Pennsylvania.	Christiania, Norway.
" " "	L.P. Vorslund-Kjaer, D. D. S.	Phila. Dental Coll.	Copenhagen, Denmark.
Russia.	H. V. Wollison, D.D.S.	N. Y. Coll. Dent.	10 Quai de l'Amaranti, St. Petersburg, Russia.
"	Theo. Weber, D. D. S.	N. Y. Coll. Dent.	Helsingfors, Finland.
"	Geo. Th. Berger, D. D. S.	Phila. Dental Coll.	St. Petersburg, Russia.
Germany.	W. D. Miller, D. D. S.	Univ. Pennsylvania.	Victoriastrasse 30, Berlin, Germany.
"	C. F. W. Bödecker, D. D, S.	N. Y. Coll. Dent.	55 Unter den Linden, Berlin, Germany.
"	Freidrich Hesse, D. D. S.	N. Y. Coll. Dent.	Geothë Str. 6. Leipzig, Germany.
Austria and Hungary.	Otto Szigmondi, M.D., Ph. D.	Univ. Vienna.	Schmerlingplaz 2, Vienna 1, Austria.
" "	Rudolf Weiser, M.D., Ph. D.	Univ. Vienna.	Frankgasse 2, Vienna IX, Austria.
" "	Dr. Jos. Arkovy.	Univ. Buda-Pesth.	Vaczi-utca, Budapest, Hungary.

COUNTRY.	NAME.	COLLEGE.	POSTOFFICEADDRESS
Italy and Greece.	Albert T. Webb, D.D.S.	Univ. Pennsylvania.	87 Via Nazionale, Rome, Italy.
" "	Tullio, Avanzi.	Nominated.	....
" "	A. V. Elliott, D.D.S.	Univ. of Mich.	10 Via Tornabuoni, Florence Italy.
France.	J.H.Spaulding, D.D.S.	Univ. of Minnesota.	39 Boul. Malesherbes, Paris Prance,
"	Geo. B. Hayes, D.D.S.	Univ. of Mich.	Paris, France.
"	G. A. Roussel, D.D.S.	N. Y. Coll. Dent.	74 Boul. Haussmann, Paris, France.
Spain and Portugal.	R. H. Portuondo, D.D.S.	Univ. Pennsylvania.	Paseo de Recoletos 3, Madrid, Spain.
" "	Florestan Aguillar, D.D.S.	Phila. Dental Coll.	Serrano 5, Madrid. Spain.
" "	T. J. Thomas, D.D.S.	....	Bilboa, Spain.
Switzerland & Turkey.	L. C. Bryan, D.D.S.	Boston Dent. Coll.	St. Alban Anlage, Basel Switzerland.
" "	Theo. Frick, D.D.S.	Univ. Pennsylvania.	14 Tonhallenstrasse, Zurich, Switzerland.
" "	Paul J. Guye, D.D.S.	Penn. Dent. Coll.	12 Rue de Candolle, Geneva, Switzerl'd.
Japan, China & India.	....	....	....
" " "	J. Ward Hall, D.D.S.	....	Shanghai, China.
" " "	....	....	....
Australia & N. Zealand	Alfred Burne, D.D.S.	Phila. Dental Coll.	1 Lyon Terrace, Liverpool St., Sydney.
" " "	Dr. A. P. Merrill.	Phila. Dental Coll.	52 Collins St., Melb'ne.
" " "	Herbert Cox, D.D.S.	Univ. of Michigan.	216 Queen St., Auckland, New Zealand.
Cuba & W. Ind. Islands	....	....	....
" " "	Rice R. Buchanan, D.D.S.	....	47 San Francisco St. San Juan, Por. Rico.
" " "	A. E. Mascort.	Nominated.	Havana, Cuba.
Mexico & Cen. America	H. W. F. Buttner.	Nominated.	City of Mexico.
" " "	J. W. Purnell.	Nominated.	Merida, Yucatan.
" " "	J. Hunter.	Nominated.	Puerto Cortez, H'nd's.
Venz., Colom. & Ecua'r	Manuel V. Toledo.	Nominated.	Caracas, Venezuela.
" " "	J. R. Martinez.	Nominated.	Guayaquil, Ecuador.
" " "	....	....	....
Peru, Bolivia & Chile.	Chas.B.Davies, D.D.S.	Penn. Dent. Coll.	49 Plaza Anibal Pinto, Valparaiso, Chile.
" " "	S. R. Salazar, D.D.S.	Chica. Coll. Dent. Sur.	Lima, Peru.
" " "	G.W.Sparrock, D.D.S.	Nominated.	Lima, Peru.
Brazil and Guiana.	J. L. Fordham.	Nominated.	Rio de Janeiro, Brazil.
" "	Julius Weinburger.	Nominated.	Para, Brazil.
" "	....	....	....
Argentina, Para. & Uru.	J. S. Burnett.	Nominated.	Salto, Uruguay.
" " "	J. C. Macartney.	Nominated.	Montevieded o, Uru.
" " "	....	....	....

MEMBERSHIP OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES, AT ADJOURNMENT, JULY, 1901.

The following is a list of the dental colleges of America which at the present time are members of the National Association of Dental Faculties, whose diplomas and tickets alone are recognized and received by the members of the association:

Alabama.............	Birmingham...	Birmingham Dental College.
California.............	San Francisco.	Dental Dept. of College of Physicians and Surgeons.
"	San Francisco.	University of California, College of Dentistry.
"	Los Angeles....	College of Dentistry, Univ. of Southern California.
Colorado..............	Denver.........	Colorado College of Dental Surgery.
District of Columbia..	Washington....	Dental Department of National University.
" " " ..	Washington....	Dental Department of Columbian University.

District of Columbia	Washington	Dental Department of Howard University.
" " "	Washington	Georgetown University, Dental Department.
Georgia	Atlanta	Atlanta Dental College.
"	Atlanta	Southern Dental College.
Illinois	Chicago	Chicago College of Dental Surgery.
"	Chicago	College of Dentistry, University of Illinois.
"	Chicago	Northwestern University Dental School.
Indiana	Indianapolis	Central College of Dentistry.
"	Indianapolis	Indiana Dental College.
Iowa	Iowa City	University of Iowa, College of Dentistry.
"	Keokuk	Keokuk Dent. Col., Dent. Dept. of Keokuk Med. Col.
Kentucky	Louisville	Louisville Col. of Dentistry, Dept. of Cent. U. of Ky.
Louisiana	New Orleans	New Orleans College of Dentistry.
Maryland	Baltimore	Baltimore College of Dental Surgery.
"	Baltimore	Baltimore Medical College, Dental Department.
"	Baltimore	Dental Department University of Maryland.
Massachusetts	Boston	Dental School of Harvard University.
"	Boston	Tuft's College Dental School.
Michigan	Ann Arbor	Dental College University Michigan.
"	Detroit	Dental Department Detroit Medical College.
Minnesota	Minneapolis	College of Dentistry, Dept. of Med., Univ. of Minn.
Missouri	Kansas City	Kansas City Dental College.
"	Kansas City	Western Dental College.
"	St. Louis	Marion-Sims Dental College.
"	St. Louis	Missouri Dent. College, Dent. Dept. of Wash. Univ.
Nebraska	Omaha	Dental Department University of Omaha.
New York	New York	New York College of Dentistry.
"	New York	New York Dental School.
"	Buffalo	University of Buffalo, Dental Department.
Ohio	Cincinnati	Cincinnati College of Dental Surgery.
"	Cincinnati	Ohio College Dental Surgery.
"	Columbus	Ohio Medical University, Dental Department.
"	Cleveland	Western Reserve University, Dental Department.
Oregon	Portland	North Pacific Dental College.
Pennsylvania	Philadelphia	Dental Department University of Pennsylvania.
"	Philadelphia	Medico-Chir. College of Phila., Dept. of Dentistry
"	Philadelphia	Pennsylvania College of Dental Surgery.
"	Philadelphia	Philadelphia Dental College.
"	Pittsburg	Pittsb. Dent. College, Dept. of West. Univ. of Pa.
Tennessee	Nashville	Dental Department, University of Tennessee.
"	Nashville	Department of Dentistry of Vanderbilt University
"	Nashville	Sch. of Dent. of Meharry Med. Col., Dept. of C. T. Col.
Virginia	Richmond	University College of Med. and Surgery, Dent. Dept.
Wisconsin	Milwaukee	Milwaukee Medical College, Dental Department.
Canada	Toronto	Royal College of Dental Surgeons of Ontario.

WILLIAM C. BARRETT,
208 Franklin st., Buffalo, N. Y.
JOHN D. PATTERSON,
Ninth and Walnut sts., Kansas City, Mo.
TRUMAN W. BROPHY,
126 State st., Chicago, Ill.
M. W. FOSTER,
9 W. Fayette st., Baltimore, Md.
EUGENE H. SMITH,
283 Dartmouth st., Boston, Mass.
Foreign Relations Committee.

PROCEEDINGS OF SOCIETIES.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

DISCUSSION OF CORRESPONDENT'S REPORT. SEE PAGE 940

Dr. Goldsmith: The question brought to our notice by the correspondent for this year is a very vital one and one which seems to be viewed differently by many of the members of the profession. That there should be some organized effort to solve the various problems which exist, and arise from time to time, seems to be fairly well agreed. This effort, however, from the limited vote taken it would appear should be supplemental to one of an individual nature.

Our correspondent says he is an evolutionist, and in regard to the subject under discussion I am in accord with him. In my estimation dental problems will best be solved when dental society organization has been improved. Every state in the union should be made up of districts which contribute delegates, etc., to the state society the same as our own state society. These various state societies then to send delegates to the national society as also already provided.

The point, however, which I wish to bring out is that each state society should contribute funds to the parent or national society by which there should be established a national academy of dentistry or national dental laboratory, the name to be decided after the project had assumed shape. The national academy to be composed only of such men as had demonstrated their abilities in special work, who would receive sufficient compensation to make them independent of the necessity of earning a living at the chair.

It has been stated that men work best who work without pecuniary reward, but, gentlemen, the men who would comprise the national academy of dentistry should be only those who had already demonstrated their abilities and the title F. N. A. D. (Fellow of the National Academy of Dentistry) would be a goal the desire to reach which would stimulate individual effort.

Dr. Ottolengui, in his report as correspondent a year ago, suggested establishing an honorary membership in the national society, and suggested a title of Fellow of the National Association. The idea herein outlined differs inasmuch as the fellowship suggested is not a membership in the society, but is to be a salaried office for definite work. One objection to establishing any position of this sort is that political influence and not merit might be the principal factor in obtaining preferment. This would be eliminated to a great extent by the requirement that the successful competitor must be one who had already demonstrated his superiority and might still further be excluded by constituting an elective commission composed of members of the various college faculties and containing also some eminent member of the bench.

Should this dream ever be realized and the academy firmly established I do not think it would be at all out of the way to expect a contribution from the government. Why is it that the Germans have led in medical research? It is because the government encourages and supports it. The work for the most part is done in colleges supported by the government, but as a government dental college is practically out of the question in this country, let us do what we can to establish a national academy of research and the sooner the national society is looked up to as the parent of the state societies in fact, and substantially supported with financial aid the sooner will our end be achieved.

Great works are not accomplished at once, nor do I expect the academy to be built in a day, but the sooner factional, sectional and collegiate jealousies are subdued the sooner will the brake be removed from the wheels of progress and the easier it will be to solve dental problems.

The national association at its last meeting voted that the sections should make an effort to encourage original work and that they should appoint a supervisory committee. I am informed this committee was to select and pay some one to perform special work each year. I am not informed, however, whether this plan ever matured. It was good as far as it went, but it did not go far enough.

In the meantime the suggestion of Dr. Hatch, which he made last year, and repeated in his report just read, is a very good one, and deserves more notice than was given last year. There are certain questions, for instance, that of cements, which, had we a paid chemist, would be nearer solution; and I think the society would do well to take action on the subject. Should this plan be successfully carried out other societies would probably emulate our example and many of the problems which now perplex us would be solved.

DISCUSSION ON DR. E. S. TALBOT'S PAPER.

Dr. R. H. Hofheinz, Rochester, N. Y.: The paper before us is a very remarkable one. It contains excellent specimens of the writer's broad, scientific intellect and of his personal intensity. I am not sure why I should have been chosen to discuss a paper on pathology, as I have never posed before the dental community as a pathologist who has a claim to original investigations.

A great lesson is given us by the author when he says: "Extract two teeth on one jaw, inflammation about the tooth or teeth having no occlusion sets in, bone cells are deposited, the alveolar process elongated, carrying the tooth or teeth upward or downward until occlusion is restored. Later, when auto-intoxication takes place, or drug poison, violent inflammation sets in with marked interstitial gingivitis, absorption and loosening of the teeth."

Gentlemen, if you would receive no other object lesson from all the papers read before this meeting, it should have compensated you for your trip to Albany. The great and powerful factor which malarticulation plays in the development of interstital gingivitis has never been more forcibly expressed. In a first-class dental practice these observations are but rarely made. I have seen more cases of true interstitial gingivitis caused by malarticulation in one winter of my college duties, than I have possibly observed in all of my private practice before. I pass to you a model of one of the students which is as typical a case as I can find. The entire denture is free from all troubles of the described nature, but the first molar of the right superior jaw, which is elongated owing to the untimely extraction of the inferior six-year molar. A condition of interstitial gingivitis exists to-day which threatens the life of the six-year molar and has largely attacked the twelve-year molar.

This result alone should dispose of any attempt at injudicious extraction of teeth. The time has passed when the argument of inability to save a six-year molar had a right for existence. Our advanced methods of filling teeth with gold, our advanced knowledge of the physical property of amalgam, and a justified crowning of the first molar, makes the argument obsolete. This outward movement of the teeth is resorted to by nature to establish a new and useful relationship with the other teeth; and thus she takes her revenge for the undue interference of human lack of knowledge and observation.

The author tells of his valuable experiments to ascertain whether bone absorption in regulating teeth was a purely physiologic or pathologic process. The results of these experiments indicate a true pathologic character. It suggests to me the question whether the activity of the cells involved is extremely physiologic or incipient pathologic. It may permit of the question whether the processes are not differences in degree rather than in kind.

In regard to Dr. Talbot's statement about the calcic deposits, the question in this connection has presented itself to me thus: How much of this so-called serumnal deposit on the roots of teeth is due to direct deposition from the blood, and how much to a low inflammation bordering on, or possibly associated with, suppuration, the pus not accumulating beyond a point at which it is readily picked up and disposed of without suggestion of outflow about the tooth? These seem to me questions of possible disputation.

The treatment of the peridental abscesses is not always successful. My clinical observations confirm the fact that some systemic diathesis is especially inciting this class of dental perplexities. I have at no time observed their prevalence more than during the past winter, the most memorable one for the Russian blessing to humanity, la grippe. La grippe microörganisms are no doubt responsible for this as they are responsible for the many complications in the ethmoidal sinus, the middle ear, etc.

The only successful and rapid method of treatment, according to my observations, consists in a thorough cleansing of the pus sinus with three per cent solution of hydrogen dioxide, after which a fifty per cent solution of the tincture of iodine applied in connection with cataphoresis and ten volts, one and one-half to two milliamperes applied for ten or fifteen minutes have cured a number of cases which the ordinary methods of treatment refused to do. It produces a temporary irritation more or less intense, but is the most efficacious method of treatment known to me.

The author finishes his paper by telling us "that the experiments cited by Dr. Ottolengui from Dr. Kirk are of Decade's old type, destitute of value as to their special character, containing elements of error not removed by control experiments. No pathologist acquainted with septicæmic infection would have deemed them worthy the time wasted on them. There is a vast field of modern dental pathology which Dr. Kirk and Dr. Ottolengui have left unexplored; while wasting time in experiments that even a pathologic neophyte would have disdained to make." This paragraph seems to me open to criticism. We all know and gladly recognize Dr. Talbot's indefatigable labor in the field of interstitial gingivitis and general dental pathology. A great many of the profession, including myself, have looked upon Dr. Kirk's paper read before the union meeting in Baltimore, June 3, 1898, as the first specific attempt to describe the etiology and pathology of a pericemental abscess upon teeth with living pulps, in contradistinction to the abscess upon teeth with dead pulps, and in contradistinction to the general pus formation in cases of pyorrhea alveolaris.

After all what does it matter to whom the laurel wreath for precedence belongs? Science should not scrutinize in such direction. A well-known pathologist tells me that he has recognized cases of abscesses in teeth with living pulps for the last twenty-five years, but the gentleman failed to record his opinion, which of course deprives him of one of the leaves for his wreath of immortality. We have always looked upon Dr. Kirk as too well informed a man and too honest to omit what is due to his confreres, least to a man who ranks as high in original experimental pathology as Dr. Talbot.

As far back as 1887 Dr. G. V. Black more than hinted at this case in question when he says of an extracted cuspid which showed no signs of phagadenic pericementitis: "I found that some of the lymphatics near the gingival border of the membrane were in a state of suppuration, etc. This condition followed the lymphatic chains in the direction of the apex of the root to a distance that surprised me, considering the very slight signs of the disease before operation, and seemed especially confined to those cells, etc. This case certainly hints quite strongly at the fact that these lymphatics are the seat of this very peculiar affection." The very opinion pronounced by Dr. Kirk.

Gentlemen, never has dentistry needed the harmonious working of its scientific men more than now. We shall never make scientific progress until our investigators work together. Let all opinions stand on the foundations of their merit. Time alone will properly classify them; all unnecessarv personal intensities may lead to a polemic feeling which never yet has been conducive to the development of science. The higher regions of thought, science and large conclusions should be altogether outside of the scope of every-day feelings.

DISCUSSION ON FREDERICK W. PROSEUS' PAPER. SEE PAGE 875.

Dr. F. LeGrand Ames, Albany, N. Y.: I consider this society most fortunate in having this subject brought before it, and the great need, on humanitarian lines, so ably presented.

The needs of dental service as presented by the Essayist, from personal experience and observation, reduce the argument to an undisputable fact.

Our state institutions have been overlooked by the profession in general, and by this society in particular, and I heartily endorse the Essayist in urging this society to take this matter in hand, and not rest from its labors until every charitable and penal institution is provided with a capable, conscientious representative of the dental profession upon its board of managers or staff officers.

I am aware of the fact that the cry of greed might be raised, and that a vast amount of hard work will have to be done by someone to establish a convincing fact, that it was not a job or position that was being sought, but a desire to be helpful to unfortunate mankind for public health and moral good.

The Essayist has well said that the inmates of an institution that conserves to their health and moral good through sanitation and oral hygiene will create a more enduring benefit when other things have ceased to be a memory.

The Essayist has presented some figures that are quite startling to any one that has not given this subject any thought, by opening to our view the extent of the field for this opportunity, and yet he has but only touched upon the facts of the true conditions. He has shown that the number of inmates in the state institutions under the control of the State Board of Charity exceed 200,000, and that 133,169 are supported at public expense, while 67,488 were sustained at private expense, a total number approximating the entire army and navy of the United States.

How many of us have given a thought to the magnitude of the state's charities, or the enormous expense to care for these poor unfortunates? There are 117 institutions of charity that report to the state board, out of that number thirteen are sustained entirely by the state, at an annual expense, according to the comptroller's report for 1899, of $1,159,291.35 for general sustenance, but, mark you, *sanitation* and *oral hygiene* were not included.

It is interesting to note a few of these institutions, to show the diversified lines of these charities: Western House of Refuge for Women, State School for the Blind, Soldiers and Sailors' Home, Craige Colony for Epileptics, State Reformatory, House of Refuge for Women, Women's Relief Corps Home, Society for the Reformation of Juvenile Delinquents, State Industrial School, Rome State Custodial Asylum, State Institution for Feeble Minded Children, Thomas Asylum for Orphan and Destitute Indian Children.

I am unable to trace any state recognition of dental service for any of these institutions, other than the appointment, on July 1, 1894, for the Industrial School at Rochester, of Lewis Gilbert, "dentist," at an annual compensation of $600, and there is no record or report of service or results.

Now, gentlemen, I am aware that I must cut this discussion short, although it could be prolonged indefinitely. But I desire to present for your consideration another part of the field not touched upon by the Essayist, and that is the penal institutions. I shall present a few facts which I trust will impress and interest you.

There are in the state the following penal institutions under the control of the State Commission of Prisons: Sing Sing Prison, Clinton Prison at Dannemora, Auburn Prison, Elmira Reformatory, Eastern Reformatory at Napanock, Albany County Penitentiary, Onondaga, Monroe, Kings and New York Penitentiaries, with a population of about 10,000.

As to the conditions of existing practice in the various institutions they may best be understood by giving extracts of some correspondence: As to the Elmira Reformatory, with its population of 1,400, whose average age is 22 years, average terms 1 year and 10 months, this institution presents a condition where a great amount of good might be accomplished.

To quote from the superintendent: "A visiting dentist comes as often as may be necessary, but visits at least once every two weeks. I believe our institutions should be allowed sufficient funds to pay for the services of a competent dental surgeon, especially in an institution of this character."

As to penitentiaries, the Albany County Penitentiary has at present 266 male and 9 female inmates, average age about 35 years, short term prisoners. The dentistry is performed by the prison physician, except where a prisoner has the means to pay for a dentist to visit him, which is allowed, but which seldom happens.

Erie County Penitentiary has a population of 450 males and 60 females, terms from 10 days to 1 year. To quote from the superintendent: "We carry a good assortment of extracting instruments. The need of a dental surgeon would seem to be very slight. The great majority never make use of the dentist beyond having aching teeth extracted. If a fairly sound tooth is giving trouble, we can usually relieve them until their term is up, and they can get the needful filling outside. The long-term prisoners are usually of a little superior class; their teeth are in better condition, they giving them some attention with use of brush, etc. We venture the opinion that very few prisoners would avail themselves of the services of a dentist if he were accessible, except for extraction. The great majority take absolutely no care of their teeth through their own efforts or those of the dentist." I assume that the conditions in these two penitentiaries are a fair type of all the others.

Auburn prison contains 1,175 males and 115 females, average age 27 years, average term 4 years; none are received under 16 years of age. To quote the superintendent: "I would heartily endorse a plan to provide the prisons with a permanent dentist. The necessity in this line approaches to a considerable degree that of a physician. At the present time there are no funds available to pay the services of a dentist, and only those prisoners who have money can employ one." Truly a deplorable condition.

Sing Sing prison has a population of 1,300, all males, average age 31 years 8 months, average term five and one-half years. The superintendent says: "At present we have to depend upon the prison physician to extract teeth when necessary, but the inmates are permitted to employ a dentist from the outside to fill their teeth, etc., if they so desire. Recently I have taken the matter up with the superintendent of prisons, of employing a dentist, who will regularly visit the different prisons of the state and look after the teeth of the inmates, and I think this plan will soon be adopted. I am very much in favor of such a plan." Please bear in mind the prospective plan and the warden's opinion.

Clinton prison contains 1,027 prisoners, all males. The same condition and opportunities are available as in Sing Sing—dentists visit the prison at stated intervals and convicts are allowed to use their deposits or earnings for what dental work they may require. State Superintendent C. V. Collins uses the following language in his report to the Legislature: "Too many convicts suffer from physical disabilities, that hinder their progress, which are in many cases the results of their practices and neglect of proper habits. It is not disease so much as debility or impairment of faculties. Defective vision, *bad teeth* and similar defects handicap such men, though they may seek to do their best. The superintendent is of opinion that the services of an oculist and *dentist* in the state prison would be more effective to attain the end which he herein places first in prison education, whose true aim is to make men rather than scholars." The warden heartily agrees with the foregoing statement.

In the face of all that has been presented, can any one say that the field is not broad enough for any ambitious, progressive young man?

Gentlemen, it seems to me that the field is ripe and that the time is ripe in this, the beginning of the 20th century, when the dental profession must go arm in arm with the medical profession in all fields for sanitation and moral good.

CHICAGO DENTAL SOCIETY.

Regular meeting, Monday evening, June 10, the President, Dr. A. B. Clark, in the chair.

The evening was devoted to a Symposium in Prosthetic Dentistry, comprising paper by Dr. E. J. Perry, subject: "Scientific Articulation and Occlusion"; paper by Dr. E. A. Royce, subject: "Selection of Shades," and paper by Dr. A. O. Hunt, subject: "Adaptation," which were discussed as follows:

Dr. B. J. Cigrand, opening discussion: I regret exceedingly not having had the opportunity of reading these papers before opening the discussion, as they are of such a nature as to be especially interesting to all of us, regardless of what particular department of dentistry we are practicing in. I observe, however, that the idea of having three or four short papers on the same subject, by three or four different persons is not only instructive, but interesting as well, and it allows us an opportunity of making observations of a comparative nature.

One of the things that I observed in the reading of these papers was that the terminology was very different. It seems to me if there is any one thing that we lack in dental prosthesis it is an exact or definite terminology. We are at a loss as to definitions of terms. Each one of us, no doubt, has a clear idea of the definition of the words we employ. But why this great variety of definitions? This is one of the main things which I observed. Why so many names for the same thing? And these three papers have impressed me with the necessity of such men as are especially interested in dental prosthesis, getting together and agreeing upon some accepted terminology. Now, even in the recent meeting of the State Society we observed the great difference of opinion that occurred in regard to the words articulation and occlusion, terms which we all think we understand thoroughly, and yet, I remember on the boat-ride we took down Rock river, a number of prosthetic men got together and we didn't agree at all on the very terms that we thought we understood. And so I think that progress can come in prosthetic dentistry, quicker, by no other route, than by getting a system of terms that we all agree upon and understand. The term prosthetic dentistry, as generally understood, implies the making of full sets and partial sets of teeth on rubber, usually leaving from that term entirely the construction of crowns and bridges. I prefer the word dental prosthesis to prosthodontia. It is a bigger field to work in and I prefer the word, including, as it does, the making of full and partial dentures in rubber or metal, bridges and crowns, and all that relate to substitution, affixation and reproduction.

Dr. Perry's paper calls attention to a number of important things, and, as I said before, the papers cover so much that it would be very difficult to discuss them in justice to the authors. Artificial teeth, as they are now given to us by the manufacturers, are a long ways from being right. In the first place, the lower molars and bicuspids, as well as the upper molars and bicuspids, are too small. The anterior teeth are about right, but the posterior teeth are not,—they are too small. They must be trimmed and cut and ground in order to give them the proper shape. I remember a few years ago a gentleman made the statement in the Chicago Dental Society that if he sets up a set of teeth and had to grind them much he would feel that he wasn't fitted to practice that department of dentistry. I believed with him for some years, but now I do not believe with him at all. I believe in grinding them and shaping them for the case, cutting them down and trimming them so they will fit where they belong, and leaving those rough edges to assist in mastication. Dr. Bonwill said in one of his papers that artificial teeth were too smooth and glossy, and he was right. If we would subject them to hydrofluoric acid or grind them they would yield more artistic and mechanical results. Then the cusps of these artificial teeth must be sharpened; they are too blunt and they are indistinct and ill-shaped. They must be sharpened for this one reason—a sharp tooth will penetrate the food easier than a dull, blunt tooth-cusp, and inasmuch as patients cannot apply the force with artificial teeth that they can with their natural teeth, these cusps must be sharpened in order to penetrate the food easier. Hence, we have a number of things to do with these teeth after we get them; in fact, they must be entirely changed in many instances.

The position of the teeth. They should invariably incline toward the lingual cavity, both the lower and the upper, in order to give them a better position in the philosophy of mastication. As they are commonly set up they incline toward the vestibule of the mouth and in consequence are readily dislocated. The lower bicuspid is the most important tooth to have right. The lower first bicuspid must be absolutely in position because it is the main tooth in the jaw. After setting up your upper set, I would advise placing the lower first bicuspids next and grind the front teeth to fill in that space. As we have been taught in the past we usually set the upper teeth up first and then set up the lower ones, beginning with the centrals and working back, whereas, if we would set the lower first bicuspids and then fit all the front teeth to those two bicuspids we would have a better fit. Then another thing about the position of teeth—the upper teeth should overlap the lower ones in order to make a shoulder, or a shelf, as it were, of the lower ones to allow the tongue to throw the food upon this shelf. This also allows the cheeks to play normally, the cheeks contracting and pulling the food upward against the incisal edges and cusps of the upper teeth and the tongue throwing the food upon the shelf formed by the lower teeth, and between these two forces the food is kept between the teeth and mastication is normally performed. As we now set up teeth we put the upper bicuspids immediately over the lower and that is not according to Nature.

As regards Dr. Royce's paper, I believe that the field of dental prosthesis is gradually enlarging to such an extent that not only will it be subdivided, but its subdivisions will be subdivided. We are learning more and more that we have to copy closer to Nature. This question of green light, of which the essayist spoke, is a very important one. A dental office should be tinted green. Some few months ago the Youth's Companion wrote to all the librarians in the United States and asked them which was the most agreeable color for library walls in order to make them agreeable to the eye, and the editorial that was written upon the subject was to the effect that the most agreeable color was green; that the eye tolerated that shade with less fatigue than any other. As regards Dr. Hunt's able paper time will not admit of my discussing it, but I cheerfully agree with him in the major portion of his essay.

There were many other things that might be spoken about, but there are others here who are ready and willing to assist in this discussion, and I can only say that I am delighted with what has been given us this evening, and I regret that I did not have the papers that I might prepare some discussion and be in closer harmony with what the essayists intended and thus do justice to them as well.

DR. HUGO FRANZ: I have a word to say regarding the use of the anatomical articulator. This instrument in some cases is a very good thing indeed, but not in all. The casts which are going around were taken from persons with very shallow bites reminding one of the lymphatic type. Whenever I was present at demonstrations of the working of the anatomical articulator casts of similar types were presented by the essayists to corroborate their assumptions.

If you have to provide plates for people who originally were in possession of that form of teeth you would necessarily have to allow for the oscillating movements of the jaws which you always find in persons with a shallow bite and flat cusps in molars and bicuspids. The use of the anatomical articulator becomes imperative. The grinding of the six front teeth, according to Dr. Bonwill, would not interfere with the artistic effect. And the particular position of the teeth which our essayist requests, would be in harmony with the rest of the lines in the features of such persons.

But, if you now take a just opposite type of teeth—I mean, where there is a deep bite with well pronounced cusps and deep sulci—(you will find it in persons of a nervo-bilious temperament)

—in such cases the bite is well locked, the long cusps of the bicuspids and the deep overbite of the front teeth do not allow lateral motion to any extent, and in consequence the lower jaw moves straight up and down or nearly so. Such persons will move the jaw laterally in decidedly voluntary or accidental movements only, but never to any appreciable measure in the habitual and more involuntary motions of mastication. If you study the positions of articulation in these people you will find that all the laws as laid down for the use of the anatomical articulator come to grief. If the jaw be moved laterally you will observe on almost all cases of this type that as soon as the position of the jaw is changed from the position of occlusion to that of any articulation very often but one upper and lower tooth will articulate, while all the rest of the teeth are more or less lifted off each other. The famous compensating curve goes for nothing. Such are the whims of nature which to reproduce we are called upon in prosthetic work.

If a toothless or nearly toothless patient of that type of temperament comes to us for prosthetic services, it is best to push the anatomical articulator into the darkest corner of your laboratory and to set the teeth up solely with the artistic effect in view. Any attempt to live up to the compensating curve or to grind the front teeth after the fashion displayed on anatomical articulators will hopelessly destroy art in the production. It is much better in these cases to do the necessary grinding in the mouth of the patient after the plate is inserted. This is often not an easy matter, and it frequently takes many weary hours to accomplish an easy articulation without sacrificing art.

Moreover, if you have a plate which satisfies your artistic sense be not too much in the hurry of grinding to adapt your contrivance to the sometimes very faulty way of biting of your patient. A few days of struggle will often gain a good deal toward retaining an otherwise artistic looking plate.

What I want to emphasize is that the anatomical articulator in some cases is a very uncalled for and even perilous instrument. Not enough discrimination can be applied as to when it ought to be used. The persistent adherent to this instrument will make as many serious mistakes as the one who condemns its use entirely.

Systematizing science will often interfere with art. Bonwill's study of occlusion and articulation is wonderful and probably scientifically correct, alas, our faces, our jaws and teeth often vary sadly from the scientifically correct types, giving expression to individual habits and imperfections. Any denture, no matter how correct scientifically, will be objectionable, if it is not in harmony with the suggestions of the rest of the face.

DR. W. H. TAGGART: There is no doubt in my mind at all but what the anatomical articulator, as made by Dr. Bonwill, is an improvement over the old line articulator, but I take one of those and follow all the rules and set up the teeth according to those rules and then put them in the mouth, and I am ready to commence to articulate. The mouth is the place to articulate teeth; the place to get occlusion. You must bear in mind the fact that people who wear false teeth have been coming up to this stage for years. Possibly they lost a molar first, then a bicuspid, and they changed the way in which they masticated; certain muscles of their face changed to meet that new condition, and at the end of five years possibly another condition came up, and so on, and an anatomical articulator will not make that set of teeth suited for the mouth. I am surprised at Dr. Perry for bringing this ideal, perfect set of teeth, and showing that as one of the advantages of an anatomical articulator. That set of teeth would not look right in any mouth. That set of teeth is now just in condition to carry to the mouth and begin its study. In making a set of teeth I like to articulate them in the mouth as near as possible and then finish the lower set, and let the patient take that and wear it. Possibly when you first put the plate in the mouth, putting the finished set in the lower jaw and the wax plate in the upper, and have them bite together it will look away off. Now, have the patient take that lower plate home and wear it, and then the day after begin to articulate the upper ones to it in the mouth, and in that way you will get something that is very perfect.

Then there is another feature about articulating. The mere proper articulation of a set of teeth is not going to make a patient satisfied with it. Of course, we want to have the articulation and the occlusion as perfect as possible—these terms mean practically the same thing, depending altogether on how you look at it. If you carry that idea out and after the lower plate is made have the teeth arranged on the upper plate with sticky wax, with the hard wax, not beeswax; have the trial plate made of Ideal base plate and then the porcelain teeth are warmed quite hot and some of the sticky wax is run onto them so that it engages all around where the rubber is to be. Now that tooth is in a condition never to allow moisture to seep in back of it afterward. Then stick it into the hard wax on the plate. You can draw the tooth down or push it back and it does not leave the surface. Now, in this way you can arrange the teeth and get them so that the patients begin to see that there is something else besides fit. Then you have got to take into consideration the length of the lip. Some of these people who have been without teeth for some time have been in the habit of elevating one side of their lip more than the other.

Dr. Perry: Allow me to correct you, doctor. That feature of the subject was not discussed in the paper whatever. The subject was articulation and occlusion.

Dr. Taggart: We will come to that. This will allow you to get certain positions and movements of the jaw that this articulator will not give. Take any of your jaws. Some of you can move them half an inch farther in one direction than in another. Now, if you set them up on this articulator you do not get the movements the patient wants. I say to the patient, "Go to work with those teeth and chew the way you want to," and you will find that nine out of ten of them will move more to one side than the other. Now, if you try to make that same thing on both sides of the mouth the patient will not feel comfortable. That is because the muscles on one side of the face have become better suited to handling the food.

The artistic arrangement of the teeth can be done in this way and only in this way. I do not think it is possible to set up a set of teeth like that on an articulator and have them look right, and if you do not have a set of teeth look right, in a woman's mouth, especially, you can't make the articulation suit her. You have got to fit her head as well as her mouth.

Dr. C. N. Johnson: I don't like to see the time go to waste here. I think that the profession generally are under a great obligation to Dr. Bonwill for what he has done from the fact that he has helped to systematize this question a great deal. But I am impressed very much with what Dr. Taggart has said. I have spoken upon this line before, when Dr. Perry read his paper at the Odontological Society. I have the same feeling to-night that I had then—that there is no machine that we can make outside of the mouth that will mimic Nature as it is manifested in the method of masticating in the different individuals we meet, and if you articulate all artificial teeth according to the outline laid down here it simply means that your patients must educate themselves to eat with those teeth in that one particular way. As Dr. Taggart has said, there is a great variation in the methods that are used in masticating by different individuals. I have watched this very carefully and I want to say that I have never seen two individuals move their jaw in precisely the same way. That may be due to a habit formed by the fact that a tooth has been lost here or there, changing the relation of the upper to the lower teeth, but the fact remains that that is the practice of that individual. To articulate artificial teeth by this method may be the best thing that can be done; it may be the best way to masticate with artificial teeth, but we must not come to the conclusion that when we articulate teeth in this way that we have reached the millennium in the articulation of artificial teeth. I am fully convinced that the only way to articulate artificial teeth is to do it in the mouth. Some gentleman has said that it is not, but I know that we can make a patient more comfortable by doing it there, make them feel more natural and send them away better satisfied than we can to do it on any machine and then place the teeth in the mouth without any consideration for what that patient is in the habit of doing.

Dr. W. H. Taggart: I would like to refer to one thing more, in this close, nice articulation where we want to imitate Nature, and that is in the use of articulating papers. Recently I came across some typewriter's carbon paper, and it is a paper that will not rub off by becoming moist, but when you get it between two surfaces and rub it it makes its mark. You know in using the articulating paper you buy you have to dry the surface, and then have the patient be very careful not to let the saliva flow in there, because if it does it smears it all over like a paint. This other is not affected by moisture at all; it has a sort of waxy condition.

It seems too bad that as good a paper as Dr. Royce has given us should go by without some mention being made of it. While it is a subject which is hard to discuss, at the same time I feel like complimenting Dr. Royce for making these nice distinctions, and therein comes the art side of making artificial teeth. There are two very distinct features in making artificial teeth—mechanical and artistic—but it must be recognized that in any kind of mechanics the nearer you come to having a real fine piece of mechanism the closer you come to art. The line of demarkation, when you get up to real nice mechanics, is very finely drawn between mechanical processes and real art. And so while we can say there is the mechanical and the artistic side, at the same time the two blend very nicely together. And there is no doubt in my mind but what teeth made on the way Dr. Royce speaks of will be much more artistic. While patients probably will not be able to tell the difference between those colors, when they come to look at those teeth there will be an indescribable something about them that will make them look natural. I do not believe I have made an artificial set of teeth out of one set that we buy for years. Sometimes it seems to me that a bicuspid does not look right on one side, the same color that it is on the other side. It may be the way the patient hangs the lip, covering it over a little more, and a little blue in the bicuspid, giving it the appearance of being a pulpless tooth, will make the tooth look very artistic. So that in the ideal natural set there are those distinctions, and yet, if they were absolutely followed out in false teeth, they would not look quite as well as to be a little more marked, because we must remember if that patient had his own teeth the ravages of time would have a great deal to do with the appearance of the teeth. So that by getting inartistic blemishes into them we add to the artistic side of that set of teeth.

Dr. A. W. Harlan: It seems to me in a combination of papers of this kind that those who don't know anything about artificial teeth are the ones best fitted to discuss the subject, because we look at the teeth after the artists have done the work. Now, as I listened to these papers it seemed to me that the first paper was devoted to the question of occlusion and the question of arranging the teeth so that they simulate in that occlusion or articulation, or both, the movements of the lower jaw; of course, the upper jaw being fixed there is no movement there. And the second paper was devoted to a consideration of the shades of teeth, and something that has not hitherto been called to our attention—the classification of the shades of teeth as they appear in the normal mouth. And the third paper was devoted to the adaptation of dentures.

Now, the main part of the discussion, so far, has been with reference, more particularly, to the occlusion, or arrangement, or the abutting of the ends of the teeth against each other when the two jaws come to the proper distance so as to furnish the muscles in a state of repose, due to the age of the patient at the time the teeth were extracted or the time the teeth were substituted. The color, of course, must depend somewhat upon the amount of attrition, the age, the temperament and all that, and Dr. Royce has furnished what I consider a very good clue in that direction. Those of you who have been interested in the literature of this subject must know the work that was done by Dr. Flagg on the study of temperaments with reference to the color of the teeth. This is a paper that was presented at different times before societies in the East, and especially before the World's Columbian Dental Congress; also published in the *Dental Cosmos* three or four or five years before that, giving somewhat of a clue, but not the particular directions as to the selection of colors that have been added by Dr. Royce, which I consider is a very great advance over the work of Dr. Flagg.

Now, with reference to the adaptation of dentures. When I used to make artificial teeth myself, which is a good many years ago, I was imbued with the idea—having been brought up under the teaching of Austen—that it was absolutely necessary in every gold plate and every continuous gum plate and every rubber plate, for the superior jaw, there should be an air-chamber. Well, some twenty years ago, or thereabouts, I became satisfied that the air-chamber as an air-chamber is a failure, that it was not necessary. A discussion took place with reference to the utility of air-chambers between Dr. Land, of Detroit and Dr. Ames, of Chicago. Ames was a student in the Ohio College of Dental Surgery some twenty years ago, where they had a very excellent instructor in mechanical dentistry, as it was then called, and Ames was an original man and a good thinker and a very excellent mechanic, and he discarded the air-chamber at once and shortly afterward began the publication of a series of papers, and he, in connection with others, Dr. Hunt and the late Dr. Bell and other men gradually got the profession out of the idea, that in order to sustain an artificial denture in the mouth you must have a denture that will disturb the surface of the mucous membrane of the muscles of the mouth to such an extent as to make it an abnormality. Now, in the retention of dentures—and I have observed this in going along in practice—it seems to me that the abolition of the air-chamber is one of the great advances that has taken place in the past twenty-five years. It is true that Fauchard in 1728 really outlined the first air-chamber that we have any printed record of and it went through all of the books. I translated myself the work of Maggiolo that was published in 1807 as an experiment, and in that work you will find teeth with little bits of artificial cuttings out over the alveolar ridge that were to take the place of an air-chamber at that point, because they hadn't arrived in 1807 to the point of taking impressions of the mouth in plaster of paris. So that from 1728 to 1807, at least, the air-chamber was the principal thing, and then from that time until the publication of Fitch's work on dental surgery, and in Harris' Principles and Practice, the air-chamber appeared everywhere, and in the edition of Harris' Principles and Practice in 1861 and 1867 and 1869, which was about the time that I began the study of dentistry, or a little later, the air-chamber was everywhere. It went from the outer rim of the whole superior denture to various points, and it had figures and cubes and all those sort of things to see if they could get a greater amount of adhesion, forgetting, as was very simply illustrated before this society years ago, that when you place two flat surfaces together with moisture between, there is absolute adhesion. And so it seems to me that when Dr. Hunt speaks about adaptation that that is not the least important part of the subject, by any means. In the adaptation of inferior dentures you have something to overcome in the way of the displacement of the muscles attached to the jaw due to the long prior extraction of teeth, which is a matter that cannot be overcome in a week or a month or even six months, in many cases. And so it seems to me that those men who essay to make artificial teeth for people who have had an edentulous jaw, we will say, distal to the first bicuspids for many years, that before they meet with success they must make two or three or four dentures, and it doesn't always mean that you must weight that down with a lot of lead or Watt's metal or some other metal, but they must be accurately adjusted and fixed so that the movements of the muscles will not continually displace them. If I were going to make any specialty of dentistry, outside of the one that I am engaged in more particularly, I should devote myself to prosthetic dentistry, and I should ask for larger fees than anybody I know of now. They cheapen their work, they don't put in enough science and they don't put in enough art. I don't care whether Dr. Bonwill's articulator is faulty or not. Dr. Bonwill did a great service to the profession, and while it may not be perfect it is very much more perfect than the ordinary common articulator that we used to have that simply had a rigidity of movement that permitted of no lateral motion whatever, and the teeth looked like china teeth and you couldn't chew anything or grind anything with them. Now, with the improvements suggested by Dr. Perry and Dr. Cigrand and other enthusiastic workers, where they have ground off the glazed surface and permitted of a sliding and lateral movement, all of which are absolutely essential, I think we have great cause for congratulation to have such three very excellent papers.

Dr. J. N. Crouse: I was delighted to have three papers on three important branches of that subject. It is a good way to bring out the points. There was something mentioned here that has been a query in my mind at different times, and that was why larger molars and bicuspids are not desirable. The manufacturers at one time put out larger ones and they took them in again. They were not wanted. Why not? The amount of attachment, i. e., the amount of platinum that holds the teeth in place would have to be larger; you would have a larger amount of force applied on a big tooth, probably. I don't know what the reason was, but I do know that manufacturers took them in and did not put out those large molars and bicuspids, and there is some good reason for it probably. And now with this assembly of art and ability on that line I would like to get some pointers on this question. I have always thought that Dr. Bonwill's theory of measurements looked like an absurd thing to me and it always has ever since. I never went into the scientific part of it, but there are too many types and too many different forms of mouths to follow that rule. Undoubtedly it was an improvement over the old method when we used to have no articulator. Then we took plaster and built it out onto the end of the plaster cast and made notches in it so they would fit together.

Dr. E. M. S. Fernandez: I feel that I have been benefited by the papers I have heard this evening. It is not easy to discuss these papers without the use of a blackboard. The articulator that has been shown here to-night I do not consider anatomically correct. On examination of the human living parts in question we find the lower jaw moves as if it were hinge-jointed at the angle of the ramus, with a slight motion downward and upward to normal place, the condyles moving forward and backward to normal place, with the addition of a lateral motion, which is the only correct motion the exhibited articulator gives.

Strange as it may seem, I have had better results by using the old jaw-shaped articulator upside down than by using them the way they were intended to. My experience has forced me to vary from nature in the manner of setting and occluding artificial sets of teeth.

The natural teeth being held in the sockets of the jaws will naturally not be displaced by any lateral motion. In making full upper and lower sets of teeth, I have articulated the buccal surface line of the second lower molars one-sixteenth of an inch out from the buccal surface line of the second upper molars, with very gratifying results.

My experience does not permit me to agree with the abolishing of air-chambers.. I make an air-chamber as follows: Take a plaster of paris impression, mark the outline of the air-chamber with pencil, avoiding sharp angles. Color all the surface of air-chamber with pencil; next scrape off surface colored by pencil, scraping slightly deeper toward the outline, making the scraping reach the depth of one-thirty-second of an inch at the outline of the air-chamber. In regard to shape I guide myself by the hardness of the hard palate. An air-chamber well placed will by suction help the patient to keep the denture in place, when commencing to learn how to wear it, and after some time when the gum-tissue has grown into the vacuum, the ridge will give much support against the sliding of the denture.

In regard to adaptation, I can add nothing to what has been said, except to advocate the use of Ideal base plate as a good material for making a special impression cup.

In regard to shading, I think the paper is also an excellent one. I have done this work mostly on upper and lower continuous gum as follows:

Finish the baking up to the enameling; next grind slightly the surfaces and cusps that are to be retinted; grind other artificial teeth of shades desired to a very fine powder; mix with water and coat ground surfaces and cusps to be changed with same, having previously placed the enamel material on the denture ready for last baking.

Bake as soon as dry and the work is finished. The surfaces which have been retinted will be slightly roughened, but this only aids in making the teeth appear more natural.

Dr. C. N. Johnson: I would like to ask Dr. Fernandez in regard to this air-chamber; I should like to ask if you make a well-defined outline to it, i. e., if you make an air-chamber of uniform thickness throughout.

Dr. Fernandez: The outline of the air-chamber I would make about one-thirty-second of an inch deep all over, but toward the hard palate I remove very little of the impression, no more than the color of the pencil, making it deeper at the circumference than I do at the center.

Dr. T. W. Brophy: I have only one word to say on the subject, and that is that I am highly gratified that the subjects presented here to-night have been presented, and that the Chicago Dental Society is fortunate enough to have three papers upon such an important subject discussed. And while I have been listening to the discussion of the different gentlemen, all of whom have attained a high degree of skill by their efforts, and won a reputation that is by no means local, I see they differ somewhat in their methods, and yet, I am prepared to state from positive knowledge that each of these men has been eminently successful in this particular field of work, and I don't think that they differ to any very great extent in their methods. It doesn't make very much difference whether you use an articulator like this or an old-fashioned brass one that hasn't but one motion, or whether you have the teeth occluded upon plaster; a skillful man without an articulator, if he studies his patients' requirements and then adjusts the denture after he has set the teeth up, will be able to tell whether they are going to occlude right or not. With this one designed by Dr. Bonwill, which is a modification of the original, you certainly can do it very much better and I have no doubt that this is the best articulator that has been presented to the profession. I agree with the statement made by Dr. Crouse, and when Dr. Bonwill said that a measurement of four inches would suit anybody, I considered it an absurdity. Take, for instance, a small person, a woman who weighs one hundred pounds, and, according to Bonwill, it would be the same distance with that small face as it would with the jaws of a man that weighed two hundred and fifty pounds. I couldn't see any propriety in a statement of that kind. I don't see by what course of reasoning one could bring himself up to such a belief.

I want to say a word about Dr. Royce's paper and about the method of securing color and putting up teeth of different colors. It seems to me that that is one of the most important improvements that has been suggested to the department of prosthetic dentistry. It is true, while many may not observe it, that if you will examine anybody's teeth, the young as well as the old, in the right kind of light, with a view of discovering whether they are all of the same color or not, you will always see that they vary in color in the same mouth, and I believe that the highest degree of success in securing a denture that will be an imitation of Nature is dependent to a very great extent upon getting teeth of different colors into that denture. Dr. Fernandez said that he would change the color of the teeth, if he couldn't do otherwise, by coloring the teeth and baking. I know how successful Dr. Fernandez has been in making this kind of work. A good many years ago when he began in this city, he began in a very modest way and his income was through the making of artificial dentures for practitioners of this city, and I know very well that he was quite skilled in that and he has been acquiring a higher degree of skill since.

I agree fully with Dr. Harlan and what he said was what I intended to say, that there is not a department of dentistry to-day that is so neglected, so little understood, so shunned by students who are preparing themselves for the responsibilities of dental practice, as this department we are discussing, and it is almost impossible for the teachers in the different schools in this country to properly impress the students with the importance of understanding this department. The average young man goes out feeling that he is going to be an operator, and if he has any teeth to construct he will hire somebody to do it for him. It is the greatest mistake that ever possessed a sane mind. I expect that a great deal of good will come out of this meeting to-night in impressing upon teachers and students the importance of acquiring a knowledge of this department.

I just want to say another word about Dr. Hunt's method ot taking impressions. I think this is the first time I ever heard a man state in a public meeting how to take an impression of the lower jaw, how to do it and do it so there will be no mistake about it. It commends itself to our judgment without any hesitancy. If you open the patient's mouth pretty well and put plaster down on the lower alveolar ridge and then instruct them to put their tongue out you have just what you want. You all know that when you put a denture in the mouth and the patient begins to chew it will lift if it isn't made right; the muscles will lift it and the frenum of the tongue will lift it and the frenum of the lip will lift it. Everyone here that has put in any number of artificial dentures has had just that experience. He hasn't found out just where it lifts and he begins to work and he will work on that plate perhaps two weeks before he gets it so it will work properly. And I believe this is the first time I ever heard any one state in a public meeting how that can be done with almost a degree of certainty.

Dr. Perry, closing discussion: I don't know that there is any discussion to close. Of course, there has been some fault found with this articulator, and so far as I am concerned, I don't care; it don't make any difference to me. Now, this is a perfect model of a set of teeth, mounted on the Bonwill articulator. The habits of mastication are plainly to be seen in this jaw. This individual has been in the habit of chewing largely upon this side, and yet, all of the teeth are in position, so I got him down in a chair and I watched the movements of his under jaw in the operation of chewing gum, and I followed every movement that he made with this model. Now, I don't care whether you think this is an anatomical articulator or not; I know it is. Now, we have a gentleman here who is very skillful; I know he is very skillful in any department of dentistry—Dr. Fernandez. He has some fault to find with this articulator, and yet he has admitted to you that he uses a plain line articulator upside down. It seems to me, as Dr. Brophy has said, and as Dr. Harlan has said, and perhaps some of the others have said, that whether this articulator is perfect or not it is infinitely more perfect than a plain line articulator which isn't an articulator at all, nor is it even a perfect occludor. It doesn't represent the jaw at all and it is but a slight improvement over the old plaster articulation that we used to use when we first began the practice of dentistry. Then we made a wire coil; then we had a hinge; then came along these plain line occluders that don't rise to the distinction of articulator at all; then came along this, although this was invented earlier but was not in general use.

Now, it was not intended in my paper that I was to touch whatever upon the artistic side. I left that to Dr. Royce and I didn't say a tenth part as much as I would like to say on this subject, and yet, Dr. Taggart jacked me up a little because I didn't have an artistically arranged set of teeth. I submit the proposition to you, gentlemen and ladies, that this is an artistic set of teeth. I didn't intend to suit him; I had no idea of suiting him; I did think I might suit Dr. Fernandez. I make this statement to you, gentlemen, that a set of teeth which is properly articulated and occluded is an artistic set of teeth, because the lower incisors, as the beginning point, have been placed at the right place exactly and it is an artistic set of teeth. You can't, as Dr. Taggart says, tell where art begins and mechanics leave off.

Now, there is a gentleman here who touched upon these two cases. He said something about a deep bite. Now, that is a deep bite. He said this was a lymphatic temperament. This man is of a typical motive temperament. We have in the motive temperament these long prominent cusps, a deep overbite and a deep compensating curve, whereas, in the lymphatic temperament we have the flat cusps. Neither of these cases are of the lymphatic type in the least. It would be impossible to articulate a set of teeth of this type where the cusps were long and where there was a deep overbite, and not have a compensating curve. If you tip the articulator to one side or the other you will see that only the last tooth, or the point of the cuspid, will strike at all.

I want to thank Dr. Royce for his paper. That is an observation I am very glad he has made. I want to thank Dr. Hunt for his paper. I am pleased with that paper; it seems to be a recitation of the things which I have said and taught for a long time, and I am very glad that he is in accord with me. I hold that to properly adapt a set of teeth to the mouth certain points have to be taken into consideration. In the first place—what are we doing when we adapt a set of teeth; what have we got? We have got an irregular surface of bone covered with a cushion—some places thick, some places thin, some places hard, etc., and all there is to it is to see that the plate shall be properly adapted with reference to these thick and thin places and with reference to these hard and soft places. The word fit is not the word to use, but should be, as Dr. Hunt says, adapted. I thank you.

Dr. Royce, closing discussion: I don't know that there is much to say in closing the discussion of my paper. In regard to Dr. Taggart having made changes in dentures or sets of teeth that he has used for a good many years—I have made them ever since I have been practicing dentistry; I was taught that in college, but my efforts were almost entirely to imitate disease and wear, using blue teeth or something of that kind, grinding the teeth, etc., and my efforts were entirely unsatisfactory. Even by substituting dark cuspids the results were not satisfactory, and I never succeeded in getting anything that pleased me as an imitation of the natural teeth until I got the variation of shades in a normal denture to start with as a foundation, and it is the easiest thing in the world to make changes after that to suit the age of the patient. The principal thing that I wanted to bring to the members of the Chicago Dental Society was the influence that is exerted upon the appearance of the teeth when they are placed in the mouth. If you put up a set of artificial teeth of one shade and look at them out of the mouth they look wrong and artificial, and if you place those teeth in the mouth the disagreeable appearance is magnified very much by the surroundings and the shading by the lips. This has been impressed upon me particularly in trying to show a set of teeth that I had shaded up. In handling the teeth most dentists take them up in that way (illustrating); that doesn't give the idea of the appearance of the teeth in the mouth in the least. In order to get that appearance you must get something similar to the meeting of the lips in the mouth.

I wish I felt able to discuss the other papers, but I surely have no criticism to offer on them. They are presented by men who are better fitted for those things than myself.

Dr. Hunt, closing discussion: I presume there is no one in the room but what realizes the length and breadth of this subject, not my particular part of it, but what we have been discussing to-night, and I feel well pleased that a whole session in a dental society in the United States of America has been occupied in the discussion of matters that pertain to the department of dental prosthesis.

In regard to lower impressions. I believe the impression is the important feature about it, no matter whether the mouth has been edentulous for a long time or not, that doesn't alter the case, except that it aggravates conditions—that's all. Whenever the teeth are lost, below or above, and usually the posterior teeth are the first ones lost, the process, of course, is absorbed in the majority of cases. However, between what is left of the alveolar ridge and the attachment of the buccinator muscle there is a space always existing that is never obliterated, from the fact that it is the maxillary proper; it is the lower jaw bone that does not change. The alveolar border may be entirely absorbed, but still, between the central portion of that ridge, or where a ridge ought to be, and the attachment of the buccinator muscle, there is a space that is unchangeable. The tendency of these buccinator muscles in the loss of teeth is always to drop into the mouth, and persons who have lost their teeth do not open their mouths to the usual extent—the result is that the buccinator muscles are also lessened in their action from want of use. In making lower dentures these muscles should be used. They can be used to retain the denture in its position, to prevent lateral movement. Let me call your attention to your own mouth. If you will let your face now be entirely at rest and open your mouth and feel the motion of the buccinator at the inferior attachment you will notice the first motion of that muscle is downward and inward. Utilize that movement, make use of it to retain the lower denture in its position, making a place in the denture that will go out under this buccinator muscle so the muscle will rest on it and it will soon adapt itself to the condition. Now, suppose there is a tendency for a lateral movement? As the plate is moved to the right or left side the buccinator muscle is there to hold it. But what is the usual condition in making lower dentures? As Dr. Brophy has said, they find it hurts some place and cut off, and the cutting continues in many cases until you haven't much left. The only muscles that can lift the plate on the lower jaw are those on the lingual side; there are no elevating muscles on the labial and buccal sides. The lingual muscles, the sublingual, the mylohyoid and glossal muscles all have attachments to the muscles of the tongue; whenever the tongue moves they all move; you must deal with all of them at all times, because when one moves they all move. They must move because they are all attached together. Now, these are the things that interfere with the adaptation of a denture. Adaptation doesn't mean simply the contact of the denture to the part upon which it rests; it is the adaptation to every part of the mouth, controlling everything that can by any possibility interfere with the retention of a denture in position.

I am very glad to feel that I have been a follower of Dr. Perry in these principles, because it is always pleasant to be in the company of good men. Now, the Doctor had something to say upon my paper; I want to have something to say upon his, if there is no objection, and that is in regard to the Bonwill articulator. I am not discussing this any differently from what I have discussed it with Dr. Bonwill himself at different times. One time we were discussing it in a museum where we had a number of skulls that we measured and undertook to apply the principles of this articulator. Now, the human head in its average length is nine inches; in its average width is five inches; yet, they vary from this measurement. It is true that from center of condyle to center of condyle the average is somewhere—and here Dr. Perry hasn't stated his premises correctly, because Dr. Bonwill stated that the distance from condyle to condyle is from four to four and one-half inches, not four. The same distance from center of condyle to the mesio-occlusal margin of the lower central incisors, he insisted upon it that this articulator was a positive method of placing the lower central incisors in a position that was absolutely accurate in every case. This being the main purpose of these triangles to locate definitely the position of the lower central incisors at the mesio-occlusal margin. I haven't anything to say as opposing Dr. Bonwill and the work he did. He did a great work; there is no mistake about it. Whether this articulator is a perfect anatomical articulator or not, it is much better than any other one with which I am familiar, a much easier one upon which to articulate teeth, even if you don't follow the equilateral triangles. Now, then, in making this difference of four inches to four and one-half inches the great principle that exists in the whole human form was recognized by Dr. Bonwill, and yet, he would not conceive that there was any variation. Variation is the absolute law. This law of variation has been recognized always. Dentists are too much disposed to make of our particular department a mechanical department. Mechanics are good; the principles of mechanics are as grand as any other principles, but you can't apply them to the human form with accuracy, because the base upon which such articulators are made must be exact if it can be done. The human form is not exact. Now, there is a better way, it is a way that is absolutely artistic, and that is as to the position of the mesio-occlusal corners of the lower central incisors. The initial point in the arrangement of teeth. They are exactly the length of the lower lip in every case, no matter what the variations may be; in every case that is a true condition, it is absolutely artistic; it corresponds, it harmonizes with every face. From that starting point, which is the proper one, Dr. Bonwill was right in that particular; he took this as the starting point. They are the first teeth that come into the jaw. It is rare to find these two teeth out of their position in any mouth. If we begin in each case at this point we begin right. In getting the articulation, or bite, if you measure the margin of those teeth by the length of the lower lip in the median line of the face you will have a fixed point and you are dealing all the time with conditions that actually exist. Mechanics cannot do these things.

I thank you.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D D. S.

SHORTSIGHTED.

In recent papers received by the editor from Sydney, New South Wales, we are compelled to notice the following letter which is evidently written by one who has a poor conception of the subject :

A DENTAL HOSPITAL.

TO THE EDITOR :

Sir:—Will you permit me through your paper to protest against the injustice that is about to be done to the dental profession by the University of Sydney in establishing a dental hospital in George Street. A hospital supported by government funds, and administered by the University, is no fair competitor with men, who in the shape of taxes, have to contribute those funds and it is well known that the government are about to support this hospital to the amount of £7,000. Had either the profession or the public taken this matter up it could have been understood, but the University has no right to have done so. It is a teaching institution, and exceeds its functions when it forms itself into a hospital, or enters into unfair competition with any trade or profession.

I am assured that the establishment of this institution means ruin to many of the practitioners in whose district it will be established.

Yours, etc., A DENTIST.

August 20.

The reply thereto is subjoined. If any of our readers think that this is not a fair answer to the above, our columns are open to comments:

A DENTAL HOSPITAL.

TO THE EDITOR.

Sir:—That there exists an urgent necessity for a dental hospital in Sydney for the necessitous poor, is a fact that has been intruding itself constantly before the notice of the public generally. Ask of the clergymen, the medical men, or, more than others, the dentists, the immediate necessity for such an institution for the poor. The clergy will tell you that they have to beg free dental services for their parishioners; the medical men will assure you the general hospitals will be greatly relieved, and the general health greatly improved, by such an institution; and the dentists will assert that with a bona fide dental hospital they will do more to prevent ill-health than a general hospital will do to cure it.

As a matter of principle, a public hospital, to be bona-fide, must be a philanthropic institution, supported by philanthropic subscriptions, assisted by government, and worked by an honorary staff, for the benefit wholly and solely of the necessitous poor only.

That this principle is maintained inviolate in general hospitals I freely admit cannot be asserted, it being a well-known fact that others than the necessitous poor do at times receive benefit. In one and all of these hospitals, to a greater or lesser extent, this abuse exists, and although the governing bodies are constantly battling against it, its long and universal standing makes it one hard to eradicate. In a dental hospital there does not exist nearly so much cause or reason for this abuse as there does in a general hospital.

In dentistry, the highest fees obtainable by one operator are hardly more than double the lowest paid another for the same work. This I assure the public is a fact. Whereas, in general surgery, one man's fees may be 100 guineas for an operation that another would be glad to undertake for ten guineas. Hence the constant attempt of patients to obtain through a hospital the free services of the high priced operator when quite in a position to pay the fees of the moderately priced one. In a general hospital the surgeon (selected for his high standing in his profession) does the work himself; in a dental hospital the senior students do the major part of the work, under the supervision of the men of eminence. Therefore, it will be seen there does not exist the same inducement to obtain dental hospital treatment by fraud.

It is comparatively a very simple matter to prevent an abuse creeping in to turning one out after it has been resident a long while. Again, the entire control and management should be in the hands of experts—that is, dentists—who, naturally, will take good care that no such abuse ever creeps in.

When one is aware, as I am, that the dental profession has been ready and willing for some years past to create and work such a dental hospital for the good of the poor, but has invariably been blocked from starting it by being given to understand that the government would not assist such a cause, it is hard to credit the statement of "dentist" in your issue to-day, that the government has promised the university £7,000 for the purposes of a dental school (practical work). Neither could it have been for a dental hospital, as the university is a body for tuition, not treatment of disease. Money voted the university is absorbed by lecturers, etc., in the advancement of learning. That granted a hospital is spent in benefiting the necessitous poor.

Such a sum placed in proper hands—philanthropic—would start a dental hospital that would meet the greater part of the requirement of the poor of this city. At such an institution as this, dental students—not those of the university only—could be allowed to attend for the clinics.

After being for nearly fourteen years in charge of the dental department of the Sydney Hospital, I solemnly assert that the dental needs of the poor are such that it is a crying shame to be allowed to continue. I sincerely trust the public will take this matter up and obtain for Sydney what I believe is her most crying need—a bona fide dental hospital.

Yours, etc., C. G. Hodgson.

157 Macquarie Street, August 21.

It must be remembered that this is a new country and the dental law and the dental school are both new and untried.

Dr. W. D. Miller.

Chicago was fortunate in having Prof. Miller as a guest for even two days, for readers need not be reminded that Prof. Miller is the only American who has had the honor to fill a chair in the University of Berlin. He needs no introduction to the reading public. In a comparatively short time we were able to gather about seventy members of the profession to tender Prof. Miller a complimentary dinner. Dr. A. B. Clark, president of the Chicago Dental Society, presided and the presidents of the Odontological Society and Odontographic Society sat at each end of the long table which extended the whole length of the Chicago Athletic Association dining room. There was nothing stiff or formal about this dinner and Prof. Miller himself was perfectly at ease as he was surrounded by many long time friends and admirers. Of course there were speeches by Prof. Miller, Dr. Clark, Dr. Black, Dr. Crouse, Dr. Brophy, Dr. Gilmer, Dr. Cigrand, Dr. Nyman, Prof. Dodson, C. N. Johnson, Dr. Tenney, Dr. L. L. Davis, Dr. Case, Dr. J. G. Reid, Dr. Talbot, Dr. Harlan and others. The following were present:

Dr. C. N. Johnson.
Dr. C. W. Johnson.
Dr. Elgin Ma Whinney.
Dr. E. S. Talbot.
Dr. A. E. Baldwin.
Dr. L. L. Davis.
Dr. J. G. Reid.
Dr. F. D. Reed.
Dr. W. V-B. Ames.
Dr. Robt. Good.
Dr. G. J. Dennis.
Dr. A. F. James.
Dr. H. H. Schuhmann.
Dr. W. O. Fellman.
Dr. Rudolph Beck.
Dr. J. W. Dostal.
Dr. L. O. Green.
Dr. C. P. Pruyn.
Dr. E. X. Jones.
Dr. Geo. W. Cook.
Dr. H. J. Goslee.
Dr. J. E. Keefe.
Dr. F. H. Zinn.
Dr. C. S. Case.
Dr. D. C. Bacon.
Dr. J. E. Hinkins.
Dr. A. B. Clark.
Dr. T. W. Brophy.
Prof. J. M. Dodson.
Dr. G. V. Black.
Dr. T. L. Gilmer.
Dr. E. Noyes.

Dr. F. Dreibrodt.
Mr. F. W. Hancock.
Dr. J. B. Dicus.
Dr. W. E. Harper.
Dr. C. F. Bryant.
Dr. E. R. Carpenter.
Dr. A. W. Harlan.
Dr. T. E. Powell.
Dr. L. C. Borland.
Dr. J. B. Palmer.
Dr. A. B. Freeman.
Dr. W. Girling.
Dr. Geo. B. Perry.
Dr. Geo. W. Schwartz.
Dr. F. V. Yorker.
Dr. A. H. Peck.
Prof. Carl Beck.
Dr. Geo. U. Appel.
Dr. B. J. Cigrand.
Dr. J. N. Crouse.
Dr. H. A. Gunther.
Dr. J. W. Slonaker.
Dr. Geo. W. Pitts.
Dr. L. S. Tenney.
Dr. W. G. Clark.
Dr. Wm. Bebb.
Dr. J. E. Nyman.
Dr. J. H. Woolley.
Dr. Hugo Franz.
Dr. J. A. Dunn.
Dr. A. E. Morey.
Dr. C. N. Thompson.
Dr. J. P. Buckley.
Dr. F. B. Noyes.
Dr. R. B. Tuller.
Mr. L. J. Mason.
Dr. B. D. Wikoff.

FOREIGN CORRESPONDENCE.

The American Dental Society of Europe.

[We publish this letter as a matter of general interest to the profession.]

The members of the A. D. S. E. are desirous that a large number of Americans should visit them at the time of their next meeting, and they are especially anxious to have as many of the honorary members present as possible. It is, therefore, with regret that we learn that the date fixed for the N. D. A. meeting is August 5. We do not wish to take people away from that meeting, and we would gladly change the date of our meeting, making it late enough for you to attend both if it were possible, but you are doubtless aware that our next meeting is to be held in Stockholm. This is a city of rare beauty and is surrounded by places of interest, which afford opportunity for the most delightful excursions. While easy of access, it has been visited by but few. In short, it is an ideal place for holding a meeting in early August, but it *would not be practicable for a late meeting*.

In addition to the attractions mentioned, we have a most capable and energetic local committee, which is already at work arranging for the entertainment and comfort of visitors.

Last month at their meeting in London both the International Dental Federation and the Association of Advisory Boards adjourned to meet at the same time and place as the A. D. S. E. This gives our meeting an international character, and distinguished members of our profession from all parts of Europe and America have declared that it is their intention to attend.

In fixing the date of our meeting we must therefore think of the convenience of these bodies.

It is usual for the A. D. S. E. to hold its meeting the first week in August, at which time Stockholm is at its best. To defer it to the last of the month would undoubtedly detract from the interest of the meeting and very greatly from the pleasure of those attending. Would it not be to the interest of both societies if the meeting at Niagara Falls were changed to some time in July? then those wishing to attend could do so, and by taking steamer for Hamburg or Bremen could reach Stockholm in time for the meeting of the A. D. S. E., which, if necessary, could be held a little later than usual in order that they might participate. I am assured that if this could be arranged a large contingent would visit us. I am, therefore, writing to the president and some of the members of the N. D. A. asking them if they will change the date of their meeting to some time in July so that those of their members who wish could also attend our meeting.

Those presenting papers at Stockholm will have the advantage of addressing many of the leading members of the profession, as in an international congress; at the same time they will avoid the crowd of a congress and the danger of being obliged to read a paper that has cost many hours of hard work before a small section.

Now my dear doctor, I wish you would promise first, to help us get the meeting of the N. D. A. put forward to July; second, to accept our invitation to attend the meeting in Stockholm; and third, to read a paper at that meeting.

Will you kindly let me hear from you at your earliest convenience. Believe me,

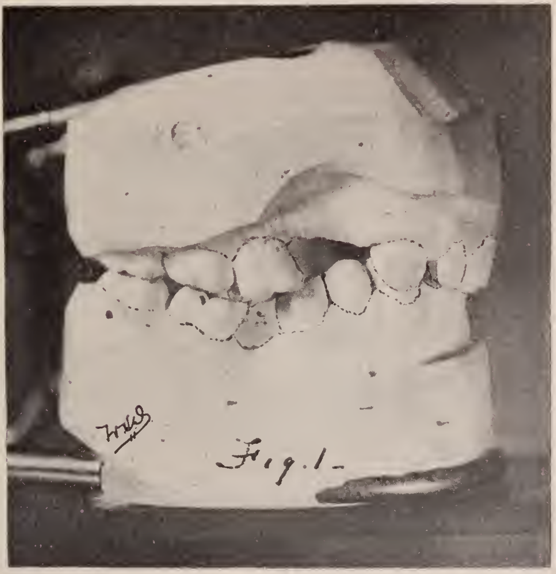
Yours very truly,

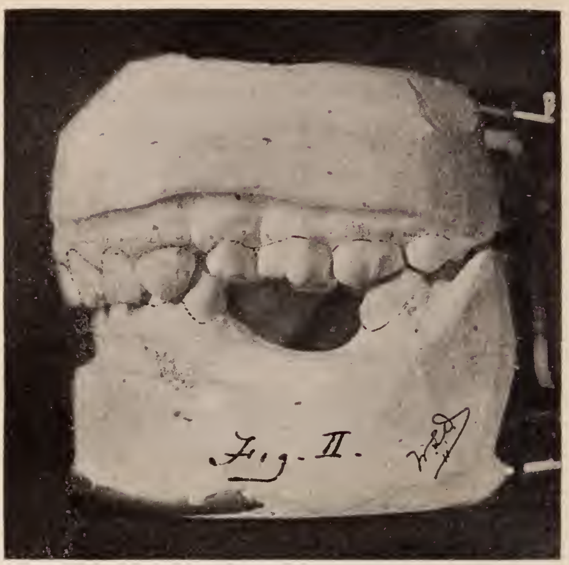
WALDO E. ROYCE, *President.*

PRACTICAL NOTES.

RE DR. DAVENPORT'S PAPER IN JULY ISSUE.

In our July issue, page 709, we published a paper by Dr. W. S. Davenport, of Paris, entitled, "Restoration. Correction of Curves, Opening and Advancing Bite by Means of Bridge Work. The photographs of this case had not arrived when the editor was on the eve of departure for Europe. We present them now, as more fully elucidating the author's meaning in the use of the above title.

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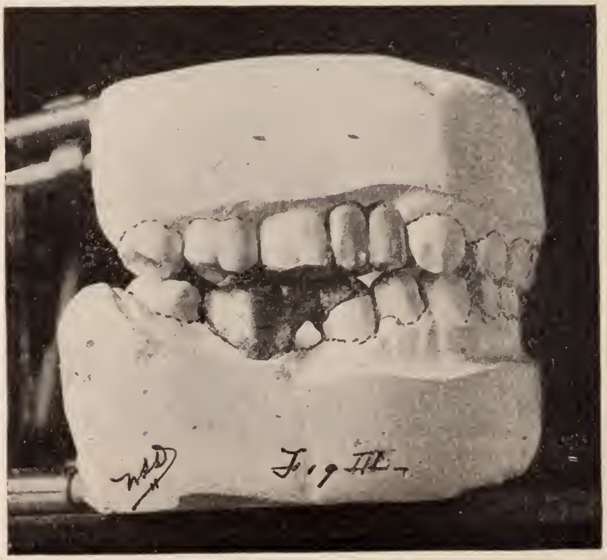
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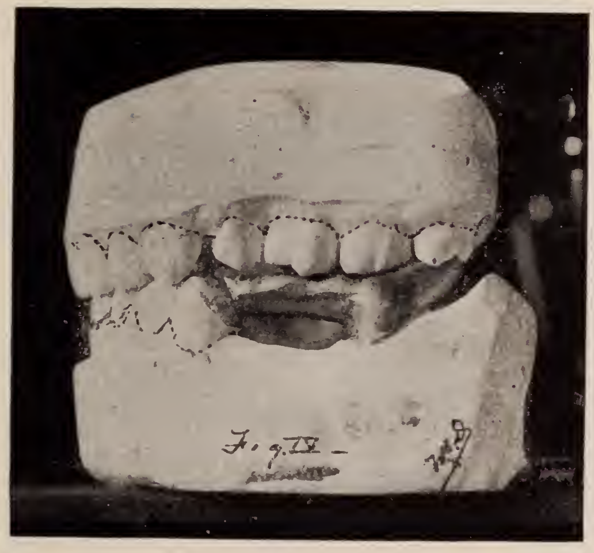
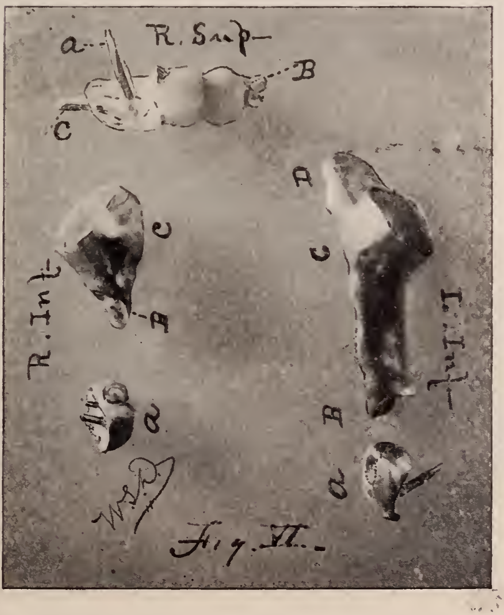


Fig. IV –
W.S.D.


a
R. Sup –
B
C
A
c
R. Int –
A
a
c
L. Int –
B
a
W.S.D.
Fig. VI. –

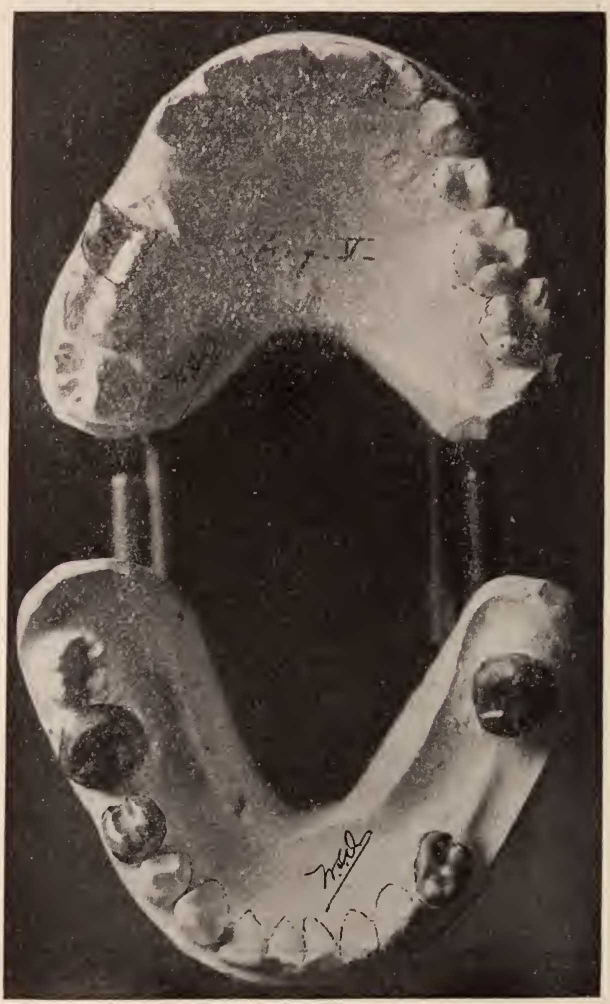


Fig. V.

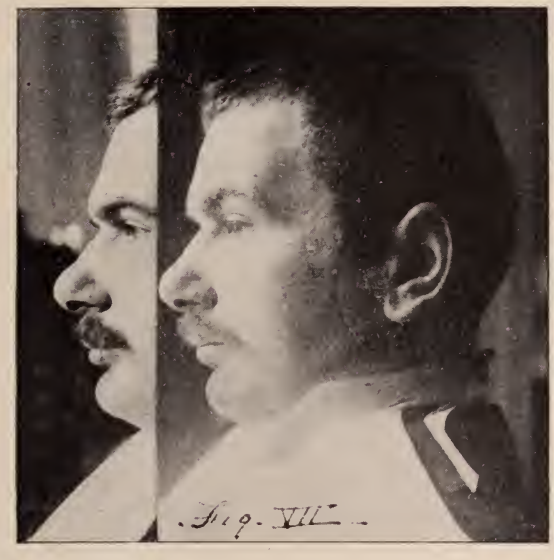


Fig. VII.

REVIEWS AND ABSTRACTS.

Dental Medicine. A Manual of Dental Materia Medica and Therapeutics. By F. J. S. Gorgas, A. M., M. D., D. D. S. Seventh edition, revised and enlarged. Philadelphia, Pa. P. Blakiston's Son & Co. 1901. Pp. 625.

This is a handsome volume, well bound and printed in good type. The price, cloth, $4. A more extended notice will be given later.

BOOKS RECEIVED.

Interrogations in Dental Metallurgy. By J. H. Beal, Sc. D., Professor of Chemistry and Metallurgy, Pittsburg .Dental College. The Calumet Publishing Co., Pittsburg, Pa.

MEMORANDA.

Dr. John L. Bingham has returned from Europe.

Dr. C. J. Sowle, of Rockford, visited Chicago in October.

Dr. R. T. Oliver has been sent to do duty in the Philippines.

Dr. W. E. Griswold, of Denver, was in Chicago in September.

Dr. J. R. Rayburn, of Fairbury, Ill., visited Chicago in October.

Dr. W. E. Boardman, of Boston, was a recent visitor in Chicago.

Dr. Frank I. Shaw, of Seattle, Washington, visited Chicago in October.

Dr. Kalteifrommondi, of Deboniel, Antigua, came to Chicago in October.

Dr. C. E. Kells, of New Orleans, spent a few days in Chicago in September.

How do you evacuate an abscess so as to drain all the pus from the cavity?

Dr. John S. Marshall is now located in San Francisco, having been assigned to duty at that station.

Dr. R. W. Morgan has gone to Cuba by assignment as dental surgeon for our forces on that island.

Dr. Wm. C. Fisher, a contract dental surgeon, is located at Fort Sheridan. Dr. Fisher formerly resided in Washington.

Dr. F. M. Shriver, of Glenwood, Ia., has been appointed a member of the State Board of Dental Examiners for a term of five years.

Dr. W. W. Walker will fill out his term of office in the Odontological Society of New York with some record breaking papers and clinics this winter.

OUR PROOF READER

Was dropped into Lake Michigan with a ton of lead around his neck after we returned from Europe this autumn.

FOR TIC-DOULOUREAUX.

Augustus C. Bernays, M. D., uses antikamnia and codeine tablets, they being found to afford prompt and long continued relief.

Dr. E. K. Wedelstaedt, of St. Paul, visited Chicago in October. Dr. Wedelstaedt has been in Boston before the American Academy of Dental Science.

Dr. Garrett Newkirk is the dean of the dental department of the University of *Southern* California, not of the University of California, as was erroneously stated last month.

It is proposed to use cocain hydrochloride and chloretone in two per cent and three per cent solutions. Parke, Davis & Co. prepare four per cent solutions that are claimed to be permanent and antiseptic.

The thirty-sixth annual meeting of the Ohio State Dental Society will be held at the Great Southern Hotel, Columbus, Ohio, December 3, 4 and 5, 1901.

S. D. Ruggles, *Secretary.*

Dr. Julius Weinberger, of Para, Brazil, spent a few days in Chicago during October. Dr. Weinberger was a member of the International Dental Congress.

A testimonial banquet was tendered Dr. N. S. Davis, of Chicago, on October 5, for more than fifty years an honored practitioner of medicine, by his associates in Chicago and from various portions of the United States. It was largely attended.

Dr. W. D. Miller, of Berlin, paid a flying visit to Chicago in September to inspect the dental schools. On Tuesday evening he was tendered a dinner at the Chicago Athletic Club by as many of the profession as could be reached on a day's notice. Dr. Miller returned to Germany October 1, after several months' well-earned rest.

St. Louis is about to hold a dental congress in connection with the Louisiana Purchase Exposition of 1903. More than $7,000,000 will be devoted to the erection of buildings. The Missouri State Dental Association appointed a committee to take the matter of the congress under consideration. This committee is composed of the following gentlemen: Dr. Wm. Conrad, Dr. B. L. Thorpe, Dr. F. F. Fletcher, Dr. W. M. Bartlett, Dr. J. H. Kennerly, Dr. M. C. Marshall, Dr. Leo G. McKellops. It seems likely now that the World's Fair will be most colossal and complete. Next month we will be able to give some further details of the congress.

David Mayne, who had been working at Smith's tannery, Tamworth, for twenty-two years, and was thirty-six years of age, met with a sad death at half past two yesterday afternoon. It appears that early last week he had toothache, and went to a dentist, who, however, declined to draw the tooth. Mayne then consulted Dr. Stanley, who advised him to go into the hospital. He accordingly did so, and on examination it was discovered that an abscess had formed in his neck. An operation was therefore performed on Sunday afternoon, but although it was successful, his life could not be saved. The immediate cause of death was septic pneumonia, caused by inhaling some of the matter from the abscess into the lung. The remains were interred at the West Tamworth cemetery this afternoon, the funeral being attended by a large number of friends and sympathizers, including deceased's fellow-employees.—*Exchange.*

THE GEORGE H. CUSHING LIBRARY AT LOS ANGELES.

A short time before his death, Dr. Cushing donated his books to the College of Dentistry of the University of Southern California, to form the nucleus of a library.

It has been decided to make this library a memorial to his name. Certain publishers have very kindly donated books for this purpose free or at a nominal cost.

It seems to us probable that many of Dr. Cushing's friends would be glad to give to this library valuable and rare books, or files of journals, possessed by them. The names of the donors will be duly entered in each volume so given, books or magazines.

Correspondence with such is solicited. DR. GARRETT NEWKIRK,
203 South Broadway, Los Angeles, Cal.

The ninth annual meeting of the Institute of Dental Pedagogics will convene on Tuesday, December 31, 1901, and continue for three days at the Seventh Avenue Hotel, Pittsburg, Pa. The usual New Year Day rates can generally be obtained. This is the only normal school existing in the dental profession. A partial program is submitted:

"President's Address," by G. E. Hunt, Indianapolis.

"Conduct of the Operatory Clinic," by G. V. Black, Chicago. (A method of keeping records, grades, etc.)

"Executive Work of the Faculty," by Drs. Kirk, Patterson, Stubblefield and Hart. (A symposium.)

"Metallurgy—How to Teach," by Dr. Hodgen, San Francisco.

"Class Room Methods of Teaching," by Drs. Hoff, Nones, Tenney, Foster. (Symposium.)

"Teaching of Prosthetic Dentistry," by G. H. Wilson, Cleveland.

"Bacteriology—How to Teach," by W. R. Blue, Louisville.

"Report of Committees on Operative and Prosthetic Technics," by Drs. Week and Hoff.

D. M. Cattell,
Chairman Ex. Board.

PATENTS OF INTEREST TO DENTISTS, ISSUED RECENTLY.

680,389. Device for forming models of crownless tooth roots, Piercy B. McCullough, Philadelphia, Pa.

680,365. Toothbrush, Wilhelm Stark, Vienna, Austria-Hungary.

681,535. Dental impression cup, John W. Fowlring, Albia, Iowa.

681,224. Dental forceps, Abram H. Jacob, Larned, Kan.

682,077. Porcelain crown facer, Charles E. Hoffman, New Albany, Ind.

682,098. Dental appliance, Wm. T. Lyon, Oregon City, Ore.

681,770. Teeth separator, Willard J. Worsley, Tinley Park, Ill.

678,452. Tooth regulator, Edward H. Angle, St. Louis, Mo.

678,453. Tooth regulator, Edward H. Angle, St. Louis, Mo.

678,374. Orthodontia wrench, George E. Brown, Chicago, Ill.

678,481. Flushing cuspidor, Harry G. Grubbs, Allegheny, Pa.

678,594. Case for toothbrushes, John W. Tully, Kansas City, Mo.

679,312. Adjustable chair back, Nathaniel B. Harmon, Brooklyn, N. Y.

679,423. Head rest, Charles E. House, Canton, Ohio.

679,647. Artificial tooth, John S. Thompson, Liverpool, England.

679,714. Cap for fixing crowns to teeth, James L. Williams, assignor to Dental Manufacturing Co., Limited, London, England.

680,119. Dental forceps, Frank A. Brewer, Jr., Watsonville, Cal.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

ALLEGED UNSKILLFUL WORK. VERDICT FOR £50 AGAINST A DENTIST.

"People who represent themselves to the public as competent to do any particular kind of work and bungled it would be held liable for any damage their clients suffered," remarked Judge Murray in the District Court, in giving judgment in a case in which Henry Forster claimed £200 from C. Davis, a Lewisham dentist. Plaintiff claimed that the defendant had unskillfully made him a set of false teeth, as the result of which a cancerous growth was formed in his jaw. The defendant pleaded not guilty.

Mr. Kelynack (instructed by Mr. J. W. Abigail) appeared for the plaintiff, and Mr. Scholes (instructed by Messrs. Rose and Payten) for the defendant.

His Honor said that the only doubt that he had entertained at all in the case was whether the plaintiff was entitled to a verdict for the full claim, or only for the return of the money which he had paid to the defendant for what his Honor certainly found was defective work on the part of the defendant. On the whole, he had concluded that the plaintiff was entitled to a verdict on the basis of a full claim. Where men chose to hold themselves forth as able to do important medical, dental, or surgical work they must be taken, in relation to the persons who employed them, as representing themselves to be properly qualified to do the work, and where they went and bungled, and serious consequences followed, they would be responsible to their clients who suffered injury. In this case he found that the balance of truth was in favor of the theory that the cancerous growth was due to the improper, clumsy and careless treatment which the plaintiff received at the hand of the defendant. In the course of the case various defences were set up which appeared to him to be remarkably untenable, and threw discredit upon the defendant in setting them up. The question of damages was a difficult one, but taking the amount paid for this defective work, and the amount actually paid away in consequence of the results which followed, and allowing something over, he thought that the plaintiff was entitled to a verdict for £50, which he accordingly allowed, with costs on the higher scale.—*Daily Telegraph, New South Wales.*

NORTHERN ILLINOIS DENTAL SOCIETY.

The fourteenth annual meeting of the Northern Illinois Dental Society will be held at Joliet, Ill., Wednesday and Thursday, October 16 and 17, 1901.

Program.—1. President's Address, W. C. Bunker, Oregon.

2. "Care of Children's Teeth," Edmund Noyes, Chicago. Discussion opened by G. M. Brunson. Continued by J. W. Cormany, J. E. Hancock, M. R. Harned, and others.

3. "Treatment of the Pulp," A. H. Peck, Chicago. Discussion opened by G. V. Black. Continued by O. A. Chappell, A. M. Markle, J. H. Woolley, and others.

4. "Lesions Peculiar to Primary Dentition," C. E. Bentley, Chicago. Discussion opened by M. R. Harned, continued by G. B. Elliott, J. J. Reed, E. R. Currier, and others.

5. "Use of the Saddle in Stationary Bridge Work," Hart J. Goslee, Chicago. Discussion opened by W. H. Taggart. Continued by E. H. Allen, E. J. Perry, W. F. Fowler, and others.

6. "Root Canal Fillings," M. L. Hanaford, Rockford. Discussion opened by C. P. Pruyn. Continued by C. W. Cox, C. E. Bentley, A. W. McCandless, and others.

7. "Incidents of Office Practice."

From time to time during the meeting the following members will be called upon: E. V. Alexander, T. W. Beckwith, C. E. Bentley, J. W. Cormany,

C. W. Cox, O. A. Chappell, J. B. Daugherty, A. J. Elmer, M. R. Harned, G. O. Kerfoot, C. P. Pruyn, E. J. Perry, A. N. Stone, and others.

Clinics Thursday.—9 A. M.: 1. Replacing facings in crown or bridge work, C. J. Underwood, Elgin.

2. The matrix and pad, F. W. Stephan, Chicago.

3. Splints for retention of loose teeth, W. V-B. Ames, Chicago.

4. Porcelain inlays, or restoration, W. T. Reeves, Chicago.

5. Table clinic, porcelain crown, E. H. Allen, Freeeport.

6. Baking porcelain in gasoline furnace, R. C. Brophy, Chicago.

7. Something new, W. H. Taggart, Chicago.

8. Griswold methods of removable bridge work. Taking of impressions, preparing of models, A. O. Hunt, Chicago.

9. Kowarska cement for use as a splint for holding loose teeth, J. E. Hinkins, Chicago.

ROYAL COMMISSION APPOINTED TO INVESTIGATE DR. KOCH'S THEORY OF TUBERCULOSIS.

It is announced in last night's *Gazette* (London) that the King has been pleased to issue a commission under His Majesty's Royal Sign Manual to the following effect:

Edward the Seventh, by the Grace of God, of the United Kingdom of Great Britain and Ireland, King, Defender of the Faith, to—

Our trusty and well-beloved Sir Michael Foster, Knight Commander of our Most Honorable Order of the Bath, Doctor of Medicine, Fellow of the Royal Society, Professor of Physiology in our University of Cambridge;

Our trusty and well-beloved German Sims Woodhead, Esquire, Doctor of Medicine, Professor of Pathology in our University of Cambridge;

Our trusty and well-beloved Sidney Harris Cox Martin, Esquire, Doctor of Medicine, Fellow of the Royal Society, Professor of Pathology at University College, London;

Our trusty and well-beloved John McFadyean, Esquire, Principal and Professor of Comparative Pathology and Bacteriology at the Royal Veterinary College; and

Our trusty and well-beloved Rubert William Boyce, Esquire, Professor of Pathology at University College, Liverpool; Greeting!

Whereas we have deemed it expedient that a Commission should forthwith issue to inquire and report with respect to tuberculosis:—

1. Whether the disease in animals and man is one and the same;

2. Whether animals and man can be reciprocally infected with it;

3. Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favorable or unfavorable to such transmission.

Now know ye that we, reposing great trust and confidence in your knowledge and ability, have authorized and appointed, and do by these presents authorize and appoint, you the said Sir Michael Foster, German Sims Woodhead, Sidney Harris Cox Martin, John McFadyean, and Rubert William Boyce to be our Commissioners for the purposes of the said inquiry.

And for the better effecting the purposes of this our Commission, we do by these presents give and grant unto you, or any three or more of you, full power to call before you such persons as you shall judge likely to afford you any information upon the subject of this our commission; and also to call for, have access to, and examine all such books, documents, registers, and records as may afford you the fullest information on the subject, and to inquire of and concerning the premises by all other lawful ways and means whatsoever.

And we do by these presents authorize and empower you, or any three or more of you, to visit and personallv inspect such places as you may deem it expedient so to inspect for the more effectual carrying out of the purposes aforesaid.

And we do further by these presents, will and ordain that this, our Commission, shall continue in full force and virtue, and that you, our said Commissioners, or any three or more of you, may from time to time proceed in the execution thereof, and of every matter and thing therein contained, although the same be not continued from time to time by adjournment.

And we do further ordain that you, or any three or more of you, have liberty to report your proceedings under this, our Commission, from time to time if you shall judge it expedient so to do.

And our further will and pleasure is that you do, with as little delay as possible, report to us under your hands and seals, or under the hands and seals of any three or more of you, your opinion upon the matters herein submitted for your consideration.

Given at our Court at St. James, the thirty-first day of August, one thousand nine hundred and one, in the first year of our Reign.

By His Majesty's Command,

CHAS. T. RITCHIE.

OBITUARY.

DR. M. LOUIS RHEIN.

During the intense heat of July Dr. M. Louis Rhein, at the time living in New York City, suffered an attack of prostration, which developed into pneumonia, from which he died on the 19th, after a very brief illness.

Dr. Rhein was born at Schwetzingen, Germany, June 2, 1828. He was educated at Heidelberg, obtaining the theoretical knowledge of his profession at the university, and acquiring manual training by apprenticeship with a jeweler. As a result of his early schooling, when in full practice of dentistry, he manifested remarkable ability in all classes of prosthetic work, which was the more noticeable because the era of artistic achievement in prosthodontia had not yet arrived. He was one of those who carved their own porcelain teeth, becoming so proficient in this art that he was offered an interest in that branch of the businss by one of the most prominent manufacturers of teeth. He began the making of continuous gum sets at the same time as Dr. John Allen, and must be reckoned as one of the pioneers in that field.

In Germany Dr. Rhein was a member of a corps of sharpshooters which was prominent in the rebellion of '48, an outbreak originating among the students. After the suppression of this short revolution, the Doctor left his native country and came to America, where he first practiced in St. Louis. On a trip to New York, on one occasion, he stopped at Albany, which city so pleased him that he removed thither, making it his permanent home, and it is in Albany that he will be best remembered as a dentist.

He had the most rigid notions in regard to ethics, always insisting upon the strictest observance of the mandates of the code. In regard to fees he held somewhat unique views. He classed his services as art work, exacted high fees and would make no reduction, giving his work outright as charity, or else demanding full fees. Because of his prosthetic skill he made appliances needed by the surgeons in Albany. He believed that a full medical education better fitted a man for the practice of dentistry, and therefore when his son, Dr. M. L. Rhein, elected to study dentistry, he was first made to graduate as an M. D., after which he was sent to a dental school.

He was a man noteworthy for the beautiful simplicity of his character. Politically he was essentially democratic in the purest meaning of the term. He granted equal rights, socially and otherwise, to all but those who by their own acts proved themselves unworthy. Of an affectionate, demonstrative nature, his love for children was peculiarly noticeable. Having retired from active practice several years ago, he has since then lived in New York City, and was a well known character in Central Park, where he loved to stroll in pleasant weather, and where he was known and beloved by hundreds of children for whom he always had sweetmeats in his pocket.

He leaves a wife aged seventy-two and three sons. The oldest, Dr. B. L. Rhein, is practicing dentistry in London; the second, M. L. Rhein, is the well known New York dentist, while the youngest son at present holds the civil position of Secretary of Pasig, Philippine Islands.—*Items of Interest.*

IN MEMORIAM.

Dr. W. H. Morgan.

Whereas, In the death of Dr. William H. Morgan, of Nashville, Tenn., the dental profession has lost a prominent man, made so through his own efforts entirely, genial in disposition and ever ready to give advice to those in need of it, constantly striving for the advancement of his chosen life work, in which he held many enviable positions; Therefore be it

Resolved, That the Odontographic Society of Chicago express its appreciation of him as a man and a dentist, and trust its members will emulate his example; and to his family do we extend our sympathy at the change which came to a well rounded life; and be it further

Resolved, That a copy of these resolutions be sent to the family, the dental journals and spread upon the minutes of this society.

Geo. B. Perry,
Geo. N. West,
Don. M. Gallie,
} *Committee.*

THE

DENTAL REVIEW.

VOL. XV. CHICAGO, NOVEMBER 15, 1901. No. 11

ORIGINAL COMMUNICATIONS.

IS THE SYMMETRICAL EXTRACTION OF THE FIRST PERMANENT MOLARS JUSTIFIABLE?*

BY DR. ELOF FÖRBERG, STOCKHOLM.

When I was requested by the President to read a paper at this meeting I hesitated in the selection of a subject.

I chose the above, not by reason only that I, by twenty-five years' experience, have come to a different opinion than that which my friend, Dr. Mitchell, expressed at the meeting of the society three years ago, but even more because the subject that formerly has been debated principally by Americans and Englishmen, in later years has been the cause of a very lively controversy in Germany. As this meeting is being held in Germany, and a great number of its members are practicing in the said country, I thought that a review of the matter might be of interest.

On the one side Fenchel, Röse, Greve and others have shown how essential it is to preserve these teeth.

Fenchel strongly recommends the use of hygienic measures for the preservation of children's teeth, and especially of the first permanent molars, the extraction of which he calls "the most barbarous act that a thinking dentist can possibly be guilty of."

On the other side, the subject in question has not been without its defenders. Dr. Sternfeld, in a recently issued publication,† which has created a good deal of attention, enthusiastically praised the symmetrical extraction of the first permanent molars.

Dr. Sternfeld, in using as a starting point Dr. Andrieu's well-known monograph, on the extraction of the six-year molar, advocates extraction in the following cases:

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*Read at the meeting of the American Dental Society of Europe in Cologne.

†Uber die sogenannte frühzeitige Extraction des sechsjährigen Molaren.

First, Where the teeth are badly decayed and the pulp exposed; *secondly,* where the size of the jaw is not in proportion with the teeth; or, in other words, where the jaw does not give sufficient room for the teeth; and, *thirdly,* where the teeth are irregularly placed or crowded. He advocates extraction "as a first-class prophylactic measure," because it *gives room,* not only for the anterior teeth, but also for the coming third molars, which he holds not to be as bad as they are generally credited with being. Dr. Andrieu finds a weighty argument in the fact that according to various statistics, the first permanent molar is more subject to caries than any other tooth.

In speaking of statistics of dental caries, I now come to the third and chief reason for my choice of the subject of this paper.

The statistics which up to the present time have been published are of a very different kind, some being founded on *extractions* of different teeth, some *on teeth* treated at a *polyclinic,* or in *private practice,* and others again on the *examination* of *school children's* teeth and of the *conscript* soldier's (Musterungspflichtige) teeth.

It is easily to be understood that the first two of the above statistics cannot be used as a foundation to build a statistic on, or about the frequency of dental caries in *general,* or the liability of the *different teeth* to this affection, so the *only* course to which we can turn for a *complete average* is through the *public schools* and the *conscripts.* Some authors have quite simply compared statistical figures obtained from such different sources, a procedure which, self-evidently, must be stamped as wholly unreliable.

In order to compare statistical figures we must take into consideration different factors, such as age, sex, race, etc.

One of the above mentioned authors, Greve, says:* "If you wish to obtain a somewhat uncriticisable statistic on the frequency of caries in the different teeth, you must compare the first permanent molars, between the ages of 6 and 7 years, with the second permanent molar, between the ages of 12 and 13 years, which up to the present time has not been done."

The Committee on *Investigation of school children's teeth,* appointed by the Swedish Dental Society, has gathered a material comprising about 18,000 children. From this *extensive material* I have worked out some *statistical tables,* showing the comparison above asked for; the statistics gathered for this paper comprise 15,000 children, of whom 8,021 are boys and 6,979 girls, between the ages of 7 and 16 years, children from both *Higher and Public Schools,* from different parts of Sweden. Therefore the figures given may be considered fully reliable.

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*Ueber die Berechtigung der frühzeitigen Extraction des sechsjährigen Molaren, Deutsche Monatschrift f. z. 1896. Pag. 324.

At the same time I will make free to trespass upon your time to elucidate the subject from another point of view.

I might not be too bold to say that a large majority of dentists, even authors, when speaking about or treating of teeth, altogether too little study the masticatory apparatus, taken as a whole. Surely our aim ought not to be simply the correction of defects in the different teeth, but to put our patient's *masticating apparatus* in a condition which will prove of the greatest functionary service.

It would carry me too far, were I to state all the different points of view from which normal articulation ought to be studied.* I desire only, with the greatest possible brevity, to draw your attention to the fact of how wonderfully well every tooth is placed in order to fulfill its purpose. How, for the protection of the gums, the teeth touch and steady one another in the arch *only at the point* on the approximal surface, where the enamel is *strongest,* and how, by means of the *tilting outward* of the upper molars, and the corresponding *inward tilting* of the lower molars, together with the placing of the upper cuspids and bicuspids *half a tooth's* breadth further back than the lowers, in the process of mastication, the different cusps of the teeth come together like the meshing of the cogs in a pair of cog wheels. Observe also the curve which the horizontal line of the grinding teeth form; this, the so-called compensation curve, serves partly to bring into contact the opposing molars during the lateral and the forward movements of the lower jaw, partly to make the masticating surfaces of the molars to occlude in such a way that the muscles of mastication may act with *full* power and to the best advantage.

Dr. Bogue very nicely compares the upper first molars grinding against the lower molars to the triturating of the pestle in a mortar.

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*See for instance: "The significance of the natural form and arrangement of the dental arches of man," etc., by Dr. I. B. Davenport, *Dent. Cosmos,* July, 1887, and Dr. G. B. Snow, "The philosophy of mastication," *Dent. Cosmos.* 1900.

Observe again how remarkably well the roots of the teeth are formed to perform their duties; the inclining position of the teeth plays a prominent part in the movement of the teeth which takes place after the extraction of one or the other of the permanent teeth.

Time permits only *to touch* on the fact, *how wonderfully well* our masticating apparatus was created in every detail.

That decay nevertheless occurs is no fault of the Creator, but is to be attributed to other causes, as, for instance, our state of advanced civilization, which makes us deviate from the laws ordained by nature.

I have previously given my views on this subject, and now desire only to point out how false in its principles it is to try to remedy defects which have risen from the latter cause (namely, advanced civilization) by attempting to improve upon nature (the apparatus of mastication).

From a false diagnosis or treatment one cannot possibly expect good results.

Advocates of the symmetrical extraction method hold as a *dogma*, that *contact* between the teeth is dangerous, therefore this contact must be removed at any cost.

I willingly admit that *tightly placed* teeth are more liable to the attacks of caries at the points of contact than those standing somewhat apart, but I shall show later on that the desired end (obtaining room) by means of the operation in question *is altogether illusionary*.

It is also easy to prove that contact between the teeth is necessary in many respects. Of course one sometimes meets people with naturally separated, strong and securely placed teeth, especially in so-called "broad faced," but this state of affairs is due to circumstances that cannot be produced by artificial means.

In order to *correct irregularity* of the teeth, and to *remove* this, *so feared contact*, the first molars now (according to the extraction theory) ought to be sacrificed; let us see to what results this operation will lead. Now, these results vary according to the time at which the operation is performed.

The advocates of the extraction method are of various opinions as to the best time for performing this operation. Some, among them Dr. Mitchell, recommend the age of 10½ to 12 years, and perhaps some months, or more closely determined, four to six months, before the eruption of the second molar; others want to see the molar already erupting, while others again would have the second molar entirely erupted. Some recommend one year's difference between the extraction of the upper and the lower teeth. I, for my part, find it quite out of place to *fix a certain age* for the extraction, for the reason that the age at which the teeth erupt varies considerably. In consulting my tables of eruption, which are gained by the examination of 15,000 children, we find that the *first bicuspids* erupt at the age of 10½ in the upper jaw and at 11 years in the lower, and the *second bicuspids* at the age of 11 years and 2 months in the upper and 11 years and 4 months in the lower jaw. *The second molar* erupts at an average age of 12 years and 10 months in the upper jaw, and at 12 years and 4 months in the lower. This for the boys. The time of eruption of the said teeth is about six months earlier for the girls.

Table XIV shows how many per cent of the teeth are erupted. At the age of 10-11 years, 100 children have an average of 198 first bicuspids and 149 second bicuspids erupted.

At the age of 11-12 years, the average number of erupted first bicuspids for 100 children amounts to 294 and for the second bicuspids to 234, consequently still far from the normal 400. As will be seen, there is some difference between the upper and lower jaw, the first bicuspids coming, as a rule, earlier in the upper jaw, whilst for the second the difference between the jaws is not very marked. The girls are, as stated, about half a year ahead of the boys, as far as the eruption of the teeth is concerned. These figures give the *average time.* The time of eruption of the second molar, for instance, *varies* between the ninth and sixteenth year of age. It is consequently necessary, *if* you want to use the symmetrical extraction method, to study carefully the circumstances in the case in question, and not follow any given rule as to a certain age.

If we now examine the mouth of a child between 10½ and 12 years of age, we will find in what a high degree the extraction of the first molars influences the masticating ability of the little patient.

Leaving out of consideration the time while the *healing process* goes on, and during which *chewing is made almost impossible,* during the time which is required for the second molar *fully to erupt,* and take the place of the first, the child is able to use only the cutting edges of the incisors and cuspids, and the small grinding surfaces of the bicuspids in chewing. These latter teeth, i. e., bicuspids, are at this time either *not yet erupted* (see above), or if so, have their roots *only partly developed.* The anatomical preparations on Table I show, Fig. 1, the jaws of a child about 10-11 years old; Fig. 2, the second dentition at the age of about 11-12, and Fig. 2, Table II, the same at 12-13 years of age.

The unfavorable influence which such defective mastication under a relatively long period must of necessity bring to bear upon the child during this most important period of its development, I believe there is no need to call to the mind of members of this meeting.

It is self-evident that under such conditions the erupting teeth will not attain a proper height, or that those already erupted, but having deficiently developed roots, will not be able to stand the powerful pressure of the muscles of mastication, after an extraction of the first permanent molars has been made.

These latter teeth, first molars, by reason of their *strongly developed roots,* their *height* and *wide masticating surfaces,* were especially ordained by nature to elevate the bite, and to *keep up the pressure of mastication,* thus allowing the bicuspids and second molars *fully to develop.* A natural consequence is most frequently *shortening of the bite,* and sometimes even *pathological protrusion* of the anterior teeth. This danger is admitted even by the advocates of the extraction method. Dr. Sternfeld, it is true, makes a distinction in the following words:* "It can impossibly be misunderstood that here the *too* early extraction of the first permanent molar, that is, before the twelfth year, or, in other words, *before the eruption* of the second molar, was condemned by me."

We have just seen that even this condition has but a meager influence on the result, for the reason that the second molar, at the time of its eruption, is not at once fitted for the task of masticating, much less has it the height and stability of the extracted first molar.

A number of more or less severe consequences of such an operation could be mentioned. I shall pass them over now, in order to examine more closely to what extent the *chief aim,* which is considered to outweigh all the above mentioned evils, will be obtained by means of the operation in question.

Most authors who recommend the symmetrical extraction give as one of their most prominent reasons that thereby *better place is obtained in the jaw for the remaining teeth.* This is the consequence of a misconception; the jaw does not retain its form unchanged as to size, but (as with every such healing process) contraction takes place; nature tries to repair the damage done and to regain the lost firmness, by pushing the teeth toward the vacant space.

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*l. c. page 19.

Assuming that the teeth meet with no opposition in their way, this movement of the teeth stops only *when they have come in contact with each other.*

During this process we have, it is true, obtained room, but *only then.*

What have we, then, gained in space?

Nothing at all. We have, on the contrary, *spoilt the natural harmony* in many ways.

On account of the loss of the first molar, a loss that can never be repaired, the *curve in the horizontal line* (the so-called compensation curve) *has been flattened* and the *normal masticating ability* has thereby *been diminished* to a great extent. Instead of the *large, strongly developed first molar,* we have received in its place the usually not inconsiderably *smaller second molar.* Teeth *not constructed to touch* each other have *come in contact,* more or less *rotated* or *tilted* in different directions. The normal growth of the jaws is, as we all know, of two kinds, the interstitial, by which room is prepared especially for the anterior teeth, and the apposition. In order to prepare for the eruption, as well for the second as for the third molar, a normal jaw becomes elongated through apposition sufficiently to give the said tooth room. As nature never acts without reason, this apposition is prevented, to a certain extent, by the extraction of the first molars, when the *second* molar takes the place of the *first,* and the *third,* in due time, the place of the *second;* we have consequently by our interference *reduced,* not only the *power of mastication for the child,* during a *most important period of its development,* we have compelled *the adult* to be contented for life with the *mouth of a child* of 12 or 14 years, and in a *deteriorated form,* as far as the *number of teeth is concerned,* as well as the *size of the jaw.*

If you try to take the impression of such a mouth, you will very soon find out how *abnormally small mouths* treated in the said way are; how *abnormally tightly* the teeth become pressed together you will find, if you try to apply the rubber dam to such a set of teeth.

Thus by our meddling we have, *far from having improved the manner of contact* between the teeth, just *called forth* those conditions which *propagate the occurrence of caries.*

Such will be the result when the teeth in both jaws have been able to follow along with the contraction of the jaws. But if, on the other hand, one or another tooth has been hindered on account of occlusion with the opposing teeth, the result will be *unpleasant spaces* in the arch, bounded by teeth *tilting together* at the top. In these spaces, naturally, particles of food become wedged in, and by pressing on the interdental papilla, cause damage in many ways. And, gentlemen, that these conditions are not fantasies, but often *facts only too real,* I beg to be allowed to show through a series of models. They have been chosen in the following manner:

I found a series of models in the museum of the Swedish Dental Society, which models show in the best possible manner the various results of the symmetrical extraction of the first permanent molar. I then looked up the persons whose names were found on the models, in order to see the result, as it now appears, 14 up to 20 years after the operation. All these models came from a very careful and skillful dentist, who was an *enthusiastic follower of the symmetrical extraction method,* and it is easily understood that the models, which had been presented to the museum *in order to show the results of his method, by no means* could be among *his worst results!*

When I looked up these patients, I myself *had no idea* how these (judging from the models) favorable results had developed afterward. I *purposely* mention this, because I foresee the objection raised, that the cases had been chosen with a certain aim. I have before said that it is as a rule given as the main reason for the extraction of the first molars, the *gaining of room.* In the description of the models that follows, I show *that this, the chief aim of the operation, falls short,* and that if we follow the case for some years, the *result* proves to be altogether *different* from that which was expected, and of which the models taken shortly after the operation gave such promising hopes.

These models prove that the changes in the position of the anterior teeth and bicuspids are *very slight,* but that, on the other hand, the second molars, after some time, *perfectly fill up* the place of the extracted first molars, and that the teeth then will become *as tightly standing as before,* if not even more so.

They prove also that the counting upon the third molars, and even other teeth, to erupt is *highly unreliable.* One often hears as a reason given for the extraction of the first permanent molar, the saying that "twenty-eight good teeth are better than thirty-two bad ones."

This reason would be irrefutable if it were taken for granted that the *thirty-two teeth must* of necessity be bad, while the *twenty-eight* be so well preserved as to deserve the mark good. My models show that the teeth remaining after the operation do not always number twenty-eight, and still less frequently are they in good condition.

If we study the models which different authors present as witnesses of the excellency of the method, we will find, on closer examination, the above named evils present in a greater or lesser degree.

In order to name a characteristic example, allow me to mention that so enthusiastic an upholder of the method as Dr. Sternfeld, when he describes a couple of cases, states that after, *pro primo,* symmetrical extraction of the first molars, and, *pro secundo,* expansion of the jaws, he was forced, *pro tertio,* "repeatedly to use *filing* of the teeth in thus trying to gain space, in order to be able to preserve the approximally decayed bicuspids by means of *filling* and *permanent separation.*" (!)

When, in a certain case, all that did not help, he adds: "It would by all means have been suitable, as a second bicuspid was decayed, to remove such a tooth on each side."

Well! a better evidence how far the method may lead can hardly be found. Even in treatment of *prognathism* of the upper jaw, extraction of the first permanent molars has been recommended.

Similia similibus curantur (like cures like) is, it is true, the foundation rule of homeopathy, but it seems peculiar that in the realm of surgery we should perform an operation likely to *induce prognathism,* in order thereby to *cure it!* It seems to me, on the contrary, much more appropriate to try to raise the bite in such cases, but *if* an extraction seems to be necessary, in order to *diminish the size* of the jaw, why not sacrifice a couple of bicuspids, whereupon the anterior teeth could be retracted with much greater ease. By no means should the teeth that *keep up the bite* be extracted in such cases. Dr. Ottolengui says in an article: * "Observe

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*Extraction and delay versus expansion and early interference in the Treatment of Prognathism. *Dent. Cosmos,* 1899.

how nearly the second molars have taken the place of the first, which were removed, and if any can explain what was gained by the extraction, I should be glad to hear his argument, as I have failed to find any rational excuse for this method."

Another reason given for the extraction is, that the first molar is *said to be more liable to decay* than any other tooth.

From my statistical tables (as most nearly touching upon the subject of my paper) I wish to show the result of the comparison between the relative frequency of caries between the first and the second molar.

In order to start fair for this comparison we must in the first place take into consideration the different times of eruption.

The first permanent molar appears with great regularity about the ages of 6 and 7 years, but the time for the appearing of the second molar, as shown above, spreads over a period of several years. The only dependable source for the comparison is therefore to see at what time both teeth have appeared in the like number, for example, for 100 children. If we compare Tables XIV and XV we learn that the first molar, at the ages of 7 to 8 years, corresponds approximately with the second molar in the upper jaw, between the ages of 14 and 15 years, but in the lower jaw, between the ages of 15 and 16, a difference therefore of respectively seven and eight years.

If we compare the frequency of caries between these teeth in the respective ages, we obtain the following summary:*

In the upper jaw—	1st Molar.	2nd Molar.
Boys	16.8	20.7
Girls	22.9	27.6
Lower jaw—		
Boys	34.3	35.3
Girls	51.0	41.0 (50?)

In looking at these figures, it ought to be hard to dispute that (within the years in question) the second molars in the upper jaw are relatively *more liable to caries than the first molar;* in the lower jaw, on the contrary, this difference is *hardly worth mentioning,* as far as boys are concerned. With girls the difference seems to go in the opposite direction, but this latter number ought not to carry any great weight, as the figure 41, judging all, must be *too small* owing to the small number of girls of that age, in the public schools, who were to be examined. Therefore incidental factors have played a great part, and made the figure lower than it otherwise ought to have been. Judging from all the rest, this figure ought not to be lower than 50 per cent or (as in the case of the boys) about *the same as for the first molar.*

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*See the black figures on Tables XIV and XV.

My clinical experience leads me to believe that the first molar, on being released from the dangerous proximity of the second deciduous molar, will not be so exposed to the attacks of caries as before, but, on the contrary, the second molar's liability to the attacks of this disease rather increases than decreases.

A support to this supposition is to be had from our statistics, which show that, while the caries frequently of the first molar from the ages of 6 to 10 or 11 years increases, on an average, about 9 *per cent every year,* it *remains nearly stationary during the following years.* According to this, the tooth seems to offer considerably greater resistance against the attacks of caries after the tenth or eleventh year than before.

I have just shown that the first molar, on account of unfavorable hygienic conditions, during the period of six to twelve years, rapidly attains a high percentage of caries, but that it remains about stationary afterward.

Fenchel, Port and Berten have come to similar results as those which I have just shown in comparing the percentage of caries between the first and second molar.

Dr. Röse, who strongly defends the first molar, concludes his opinion in the following words:*

"From this appears as an undeniable fact, that the second molars are on an average much more badly constructed than the first, and that they are consequently much more easily attacked by caries! The daily experience teaches that the wisdom tooth generally is still more badly constructed than the second molar. Under such circumstances it ought to be high time to use every means to fight the dental malpractice, according to which the four first molars should be extracted at any price!!!"

Should we try to find a comparison between the Swedish statistics and those of Röse and Port, we should find that the first molar from the twelfth year remains nearly unchanged, keeping the same, although high percentage of caries, while the figures relating to the second molar, during the same length of time, are more than doubled.

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*Das Erkrankungs verhaltniss der einzelnen Zahne des menschlichen Gebisses. Oesten. Ungar. Viert. jahrschrift f. z. VII jahry. Heft. III.

This, therefore, goes to prove that the assertion that the first molar, in comparison to the second, is much more exposed to the danger of being destroyed by caries, and on that account ought to be extracted for the benefit of the second, *will not hold water.*

I have already said, and it is shown by the models (see description of models), that the hope of *obtaining room in the jaw* by means of *extraction is illusionary.*

Herewith the chief arguments brought forward by the advocates of the extraction theory are confuted.

It is not, of course, my intention to advocate that the first molar ought *never,* under any circumstances, to be extracted! It is difficult to lay down *general rules;* we ought to study carefully every case before we make a diagnosis, and decide upon our treatment. Just as in the case of the other teeth, so also ought these to be removed if they are so badly decayed that neither filling* nor crowning will preserve them, and especially if the tooth has been destroyed so early in its career that the roots have not become fully developed.

As it has been asserted from various sources that the first molar is "the worst mischief-maker in the human mouth," and its extraction declared to be "a glorious practice," I have here, in accordance with the rule, *"Audiatur et altera pars,"* only tried to give a reason for its defence.

Drs. Davenport, Bogue and others have shown in most praiseworthy treatises the serious results which follow early extraction of the teeth in general, and have laid extra weight on the consequences which follow the loss of the first permanent molars especially.

I am not presumptuous enough to believe that by the scanty contribution that I have here been able to submit, I have brought the question to a final solution. I desire only to point out that *the usually given reasons for the extraction of the first molar will not stand the test,* and although it may be true that the tooth in

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*In Ames' phosphate of copper cement; carbonized cotton for filling of the root canals; grinding of the distal portion of the second deciduous molars, (by the way the only V-shaped separation which I as a rule consider worthy of being recommended, and further, if it is considered necessary, touching with nitrate of silver the distal surfaces of these molars, we have excellent methods of preserving the deciduous teeth).

TABLE XIV.

NUMBER OF TEETH PER 100 CHILDREN.

Age.	Upper Jaw.				Lower Jaw.			
	4	5	6	7	4	5	6	7
BOYS.								
7– 8 years	3	1	172	......	2	2	182	......
8– 9 "	16	7	198	......	8	6	199	1
9–10 "	58	33	200	2	30	26	199	3
10–11 "	101	71	200	8	67	63	200	13
11–12 "	145	161	200	30	125	101	200	51
12–13 "	176	155	200	80	166	142	200	107
13–14 "	190	178	200	130	183	169	200	150
14–15 "	198	192	200	168	196	181	200	175
15–16 "	198	194	200	182	198	191	200	184
GIRLS.								
7– 8 years	2	2	179	......	1	3	193	......
8– 9 "	24	9	197	1	12	10	199	......
9–10 "	71	37	200	1	43	39	200	4
10–11 "	123	82	200	10	105	81	200	24
11–12 "	164	126	200	40	155	125	200	69
12–13 "	187	165	200	100	181	158	200	127
13–14 "	197	183	200	148	194	180	200	164
14–15 "	198	194	200	174	199	192	200	183
15–16 "	199	195	200	193	199	192	200	190

TABLE XV.

NUMBER OF DECAYED TEETH IN PER CENT.

Age.	Upper Jaw.				Lower Jaw.			
	4	5	6	7	4	5	6	7
BOYS.								
7– 8 years	......	......	16.8	......	......	......	34.3	......
8– 9 "	5.3	......	27.0	......	......	......	50.4	......
9–10 "	4.8	2.6	41.3	......	1.8	1.3	62.2	6.9
10–11 "	4.6	4.5	43.9	3.1	1.4	4.2	64.8	12.9
11–12 "	5.4	5.0	49.9	10.2	1.8	6.0	71.1	20.8
12–13 "	6.3	5.2	54.0	13.5	2.2	7.4	72.9	23.2
13–14 "	10.1	8.7	59.6	16.5	3.2	8.4	73.8	24.6
14–15 "	11.1	10.3	61.2	20.7	3.4	7.6	76.2	29.4
15–16 "	12.3	10.9	64.6	25.5	3.3	6.6	74.6	35.3
In all	7.5	6.8	49.0	16.9	2.5	6.8	67.7	25.4
GIRLS.								
7– 8 years	......	......	22.9	......	......	......	51.0	......
8– 9 "	5.5	......	28.0	......	......	......	57.4	......
9–10 "	5.2	3.5	42.2	......	2.3	4.4	72.7	8.6
10–11 "	7.2	3.9	52.1	9.4	2.6	5.4	77.6	16.8
11–12 "	9.5	6.7	55.4	14.1	2.5	8.4	77.9	21.9
12–13 "	11.1	9.1	58.4	17.1	3.0	10.1	77.8	28.4
13–14 "	10.2	9.1	59.6	21.8	2.3	10.1	77.9	34.8
14–15 "	16.8	11.0	61.7	27.6	4.0	9.0	77.1	41.6
15–16 "	20.2	13.9	62.7	24.7	4.8	12.7	77.0	41.2
In all "	10.2	8.0	50.5	20.2	2.8	8.8	73.9	30.8

question is exposed in a very high degree to the ravages of caries, *this is not sufficient reason for its early removal.*

It is not by reason of its own deficient resisting power that the first molar is so strongly attacked by caries, but this is owing rather to the fact that it has harder attacks and proofs to withstand than any other tooth. By means of early dental care, we should influence the conditions in such a way that the first molars could become what they ought to be, our *foremost permanent teeth.*

Our task is to *help nature,* and to *correct defects* which may arise, but we are *not* to *play the part of Providence* and try to *improve upon nature.* If we desire to be considered as members of a scientific profession, and not only as tooth-drawers, we must try to find the causes why, not only the first molars, but children's teeth in general, become so early and so extensively decayed, and to remove these causes.

We should take upon ourselves the duty of instructing our patients, and thereby the community at large, regarding the hygiene of the mouth, and its great importance.

It is chiefly due to the great ignorance of parents in *disregarding all hygiene,* the value of the first molar, and its *quality as a permanent tooth,* that the great extension of caries in the children's mouths is due.

In advocating the supposed value of symmetrical extraction of that tooth, we tend to confirm parents in their misconception, and thereby render ourselves accessory to their sin of neglect.

Description of Models.

Table I.

Fig. 1.

Shows the jaws of a child, about 10-11 years old.

Fig. 2.

Shows the second dentition somewhat later, about 11-12 years of age.

Table II.

Fig. 1.

Shows the second dentition at the age of about 12-13 years.

Fig. 2.

The normal articulation after completed dentition. The masticatory movements have caused a not inconsiderable abrasion of the teeth. The compensation curve is nevertheless very conspicuous.

Table III.

This and the following ten tables show a series of cases where the symmetrical extraction of the first permanent molars has been performed.

Case I.—Miss E. L., 13 years old (Figs. 1, 2, 3).

In the upper jaw the teeth are very tightly placed. Both first molars were extracted shortly after the taking of the impressions.

In the lower jaw the left first molar was previously extracted. Both bicuspids on this side and the right second are still missing. The masticating ability is very bad, especially on the left side.

Table IV.

Shows condition of the mouth half a year later.

In the upper jaw (Fig. 1) the second bicuspids have *retracted scarcely a millimeter,* which consequently shows the *amount of room gained!* The second molars have, on the other hand, moved forward so much that only about two millimeters remain before they fully have *taken the place which the first molars occupied.* For the rest the position of the teeth is unchanged. Regarding the lower jaw (Fig. 2), the right side is practically unchanged. The second molar has erupted, and pushed the first molar somewhat forward; on the left side the first bicuspid has erupted *rotated* so that its *buccal surface* is directed toward and *touches the cuspid.* The second molar has tilted forward and inward so that it touches the second molar of the upper jaw with its posterior buccal cusp. The articulation, by reason of this, is extremely bad.

Table V.

Fig. 1.

Case II.—Miss G. B., aged 13 years. Arch somewhat saddle-shaped. Teeth in good condition, except that the first molars are somewhat honeycombed on the occluding surfaces. This probably was found reason enough for their extraction.

Fig. 2.

Lower incisors very tightly and somewhat irregularly placed. Lower left second bicuspids tilting inward toward the tongue.

Figs. 3 and 4.

Show the mouth three years later. In the upper jaw (Fig. 3), just as in the other case, the anterior teeth and bicuspids have their position *as good as unchanged.* The *second molars,* on the contrary, have *completely taken the places of the first,* but somewhat *rotated.* The saddle shape of the arch thereby *apparently* improved. A measuring of the distance between the bicuspids, on the other hand, shows that *their position is unchanged.*

In the lower jaw (Fig. 4) the irregularity of the teeth is changed only so far that the *left* second bicuspid has come into the arch *rotated* about a quarter of a turn. Second molar has come forward so that it touches the linguo-distal surface of the former. On the right side two millimeters still remain, before the second molar takes the place of the first.

Table VI.

Case III.—Miss T. B., sister of Case II. Age, 12 years. Anterior teeth in the upper jaw (Fig. 1) somewhat crowded. First permanent molars in the upper jaw had medium sized coronal cavities; the lowers (Fig. 2) were badly decayed, but savable. All four were nevertheless extracted.

Figs. 3, 4 and 5.

Show condition a little more than two months later. The second molars in the upper jaw (Fig. 3) have erupted. In the lower jaw (Fig. 4), on the other hand, *there is no tooth back of the first bicuspids,* on the right side. On the left side the anterior cusps of the second molars show somewhat more than in the former model. The masticating ability (Fig. 4) as the result of this *very deficient.*

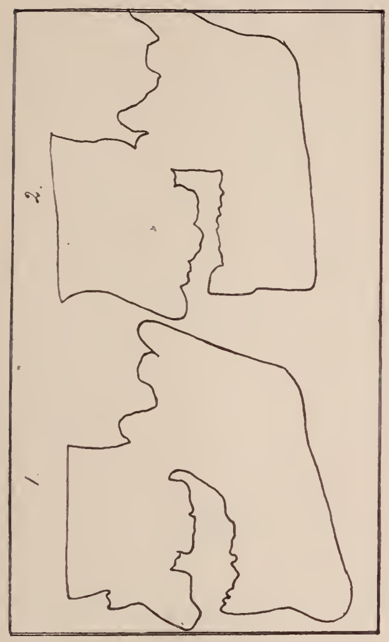
Figs. 6 and 7.

About a year later than Figs. 1 and 2. Bicuspids and molars now erupted. Large open spaces between first and second left bicuspids in the lower jaw. *Masticating ability is still poor* on account of articulation.

Figs. 8, 9 and 10.

After impressions taken eleven and one-half years after the first models were made. In the upper jaw (8) the crowding of the anterior teeth is somewhat improved. The second molars have come into the places of the first, somewhat *rotated,* and the

TAB. I



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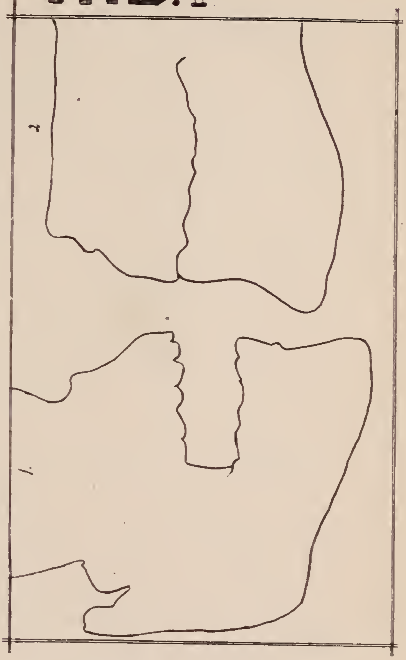

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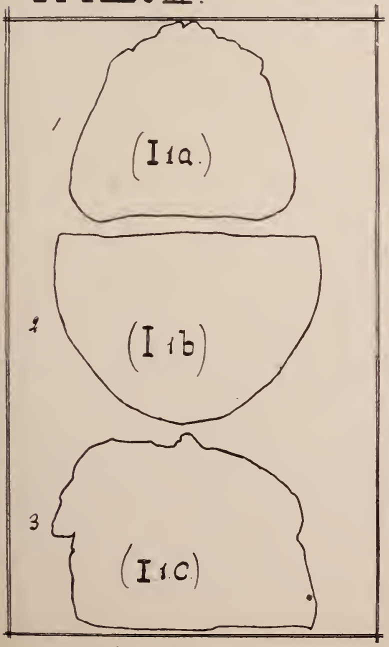

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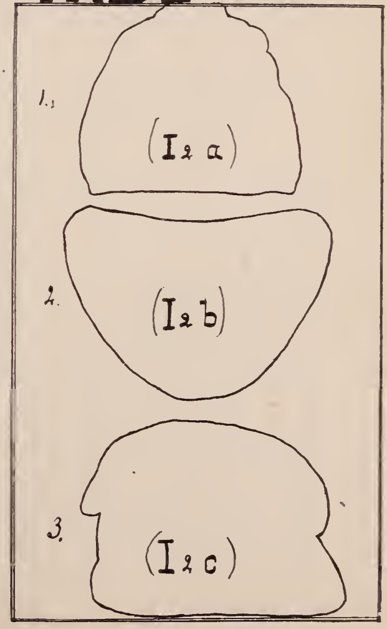

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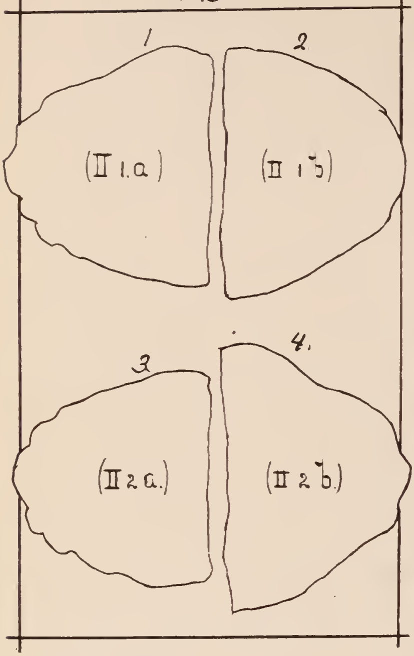

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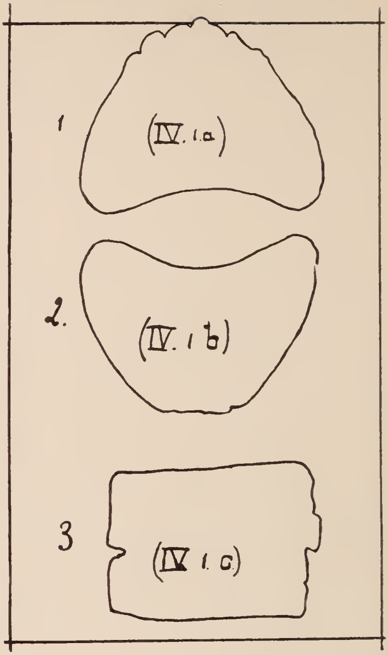

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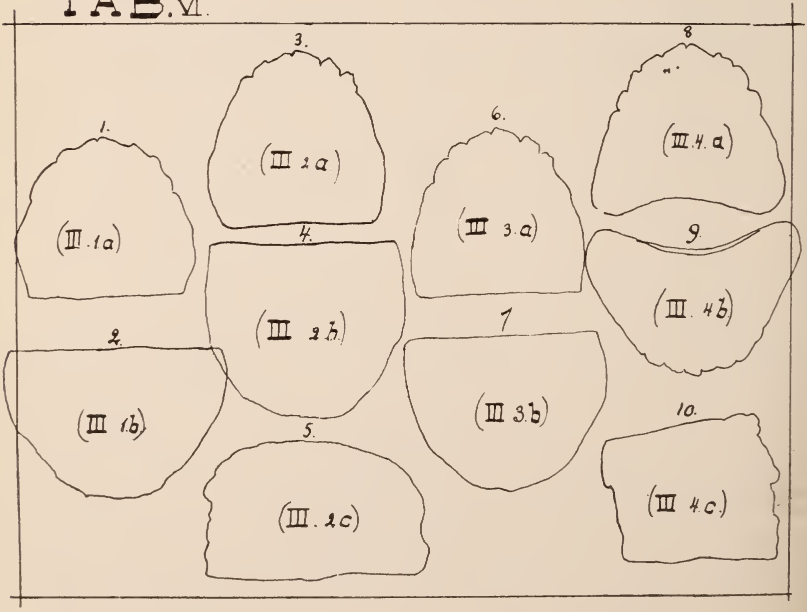

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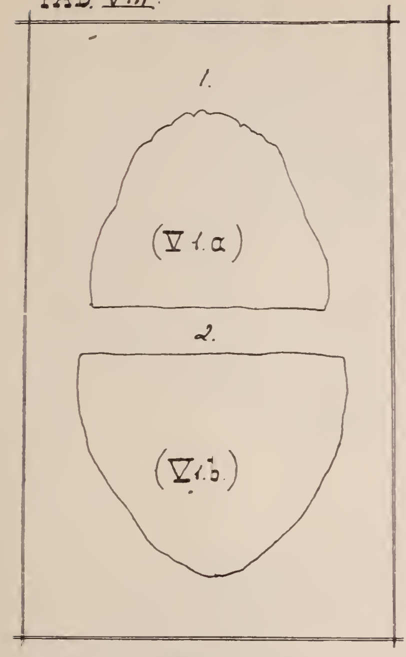

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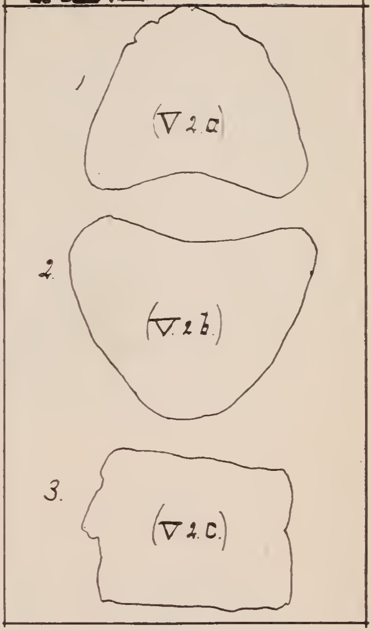

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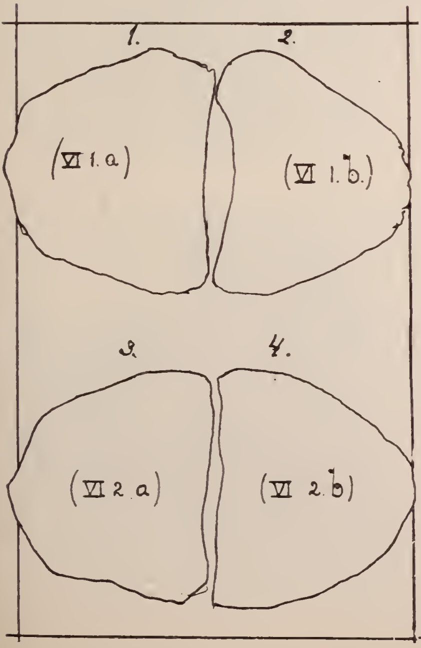
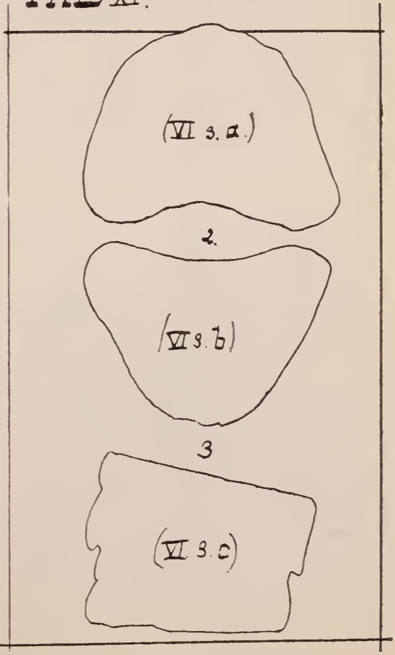
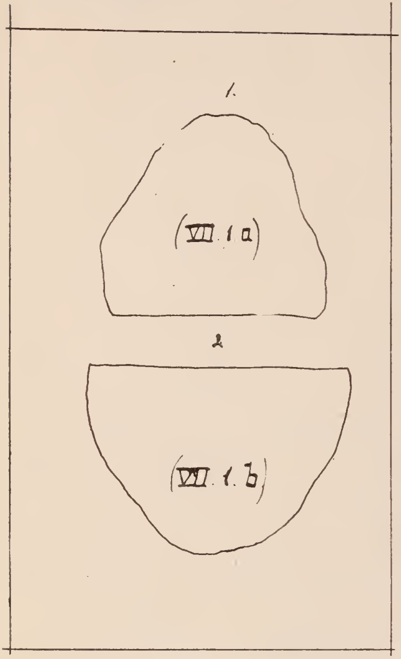


TAB XI.



TAB. XII



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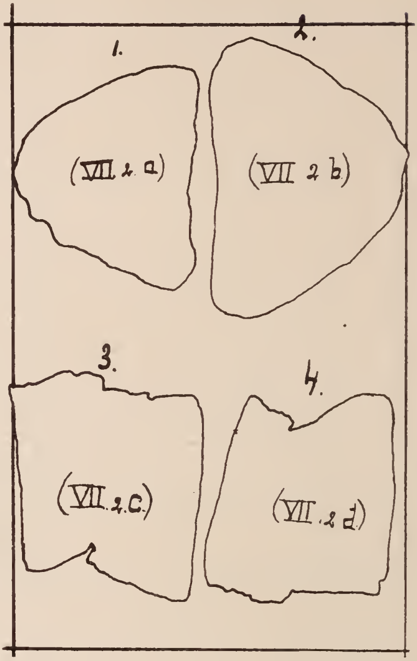

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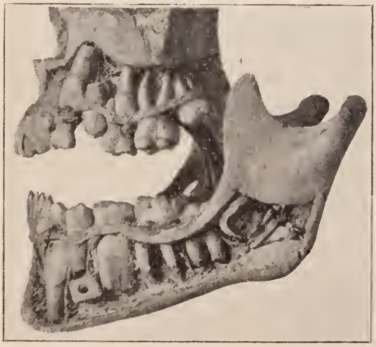

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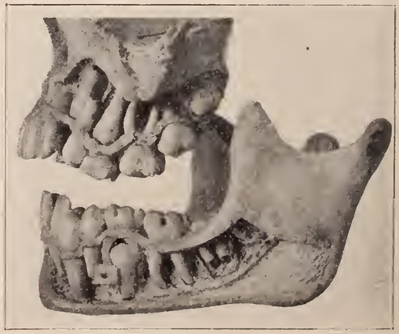

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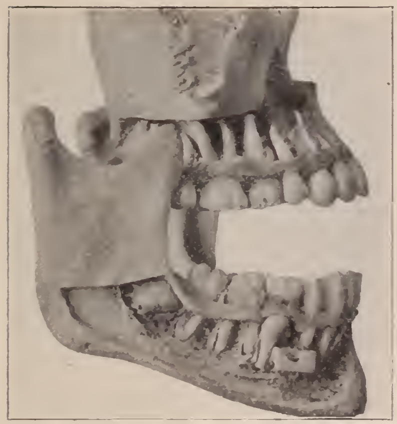

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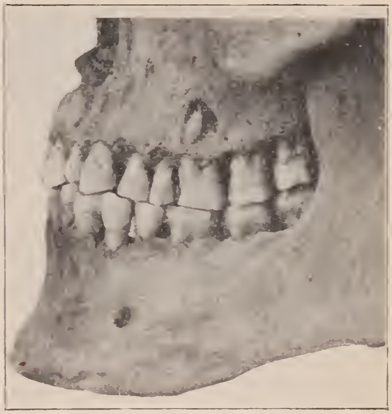

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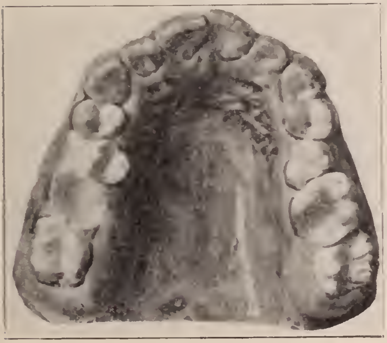

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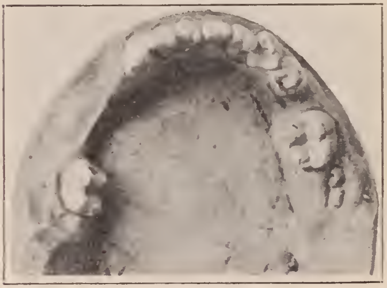

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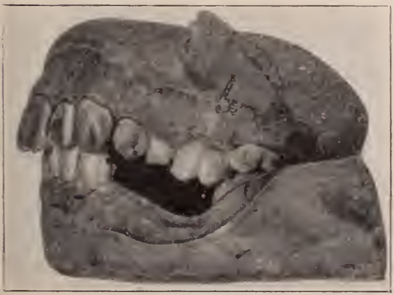

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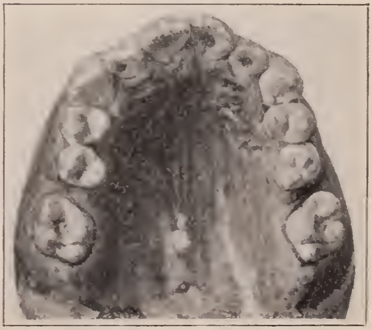

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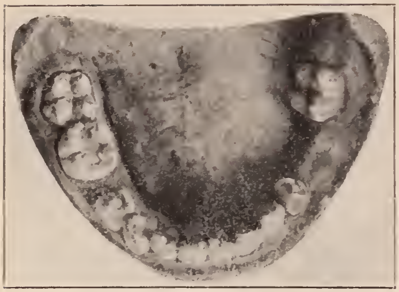

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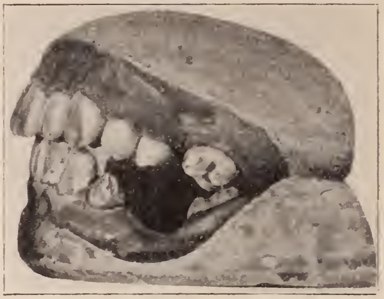

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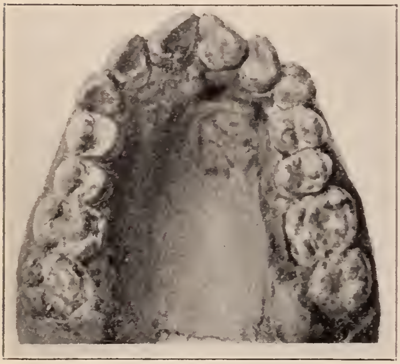

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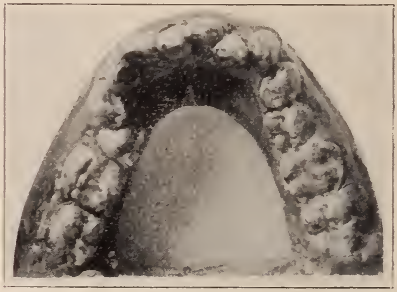

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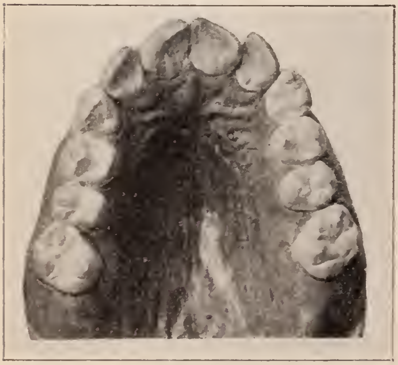

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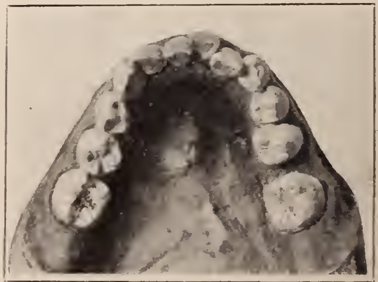

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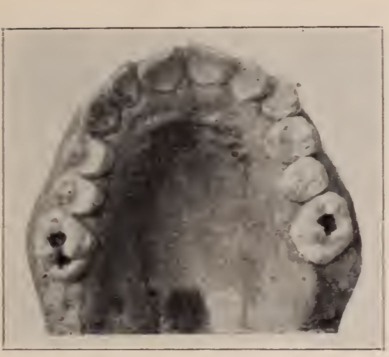

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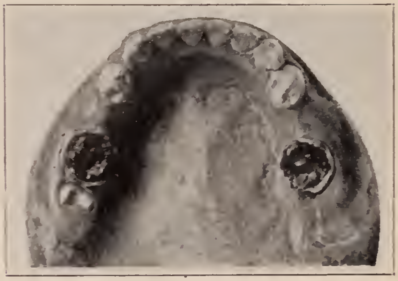

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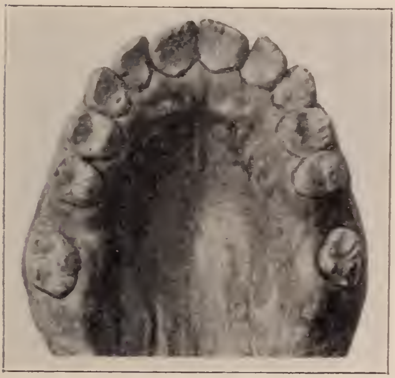

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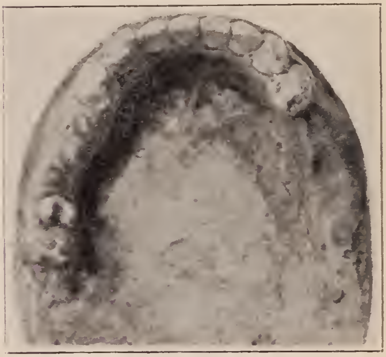

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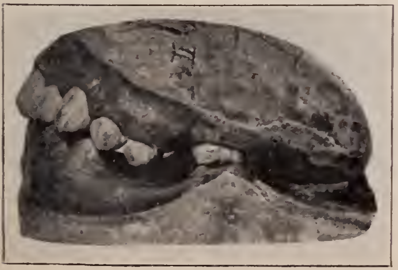

III. 2 c.

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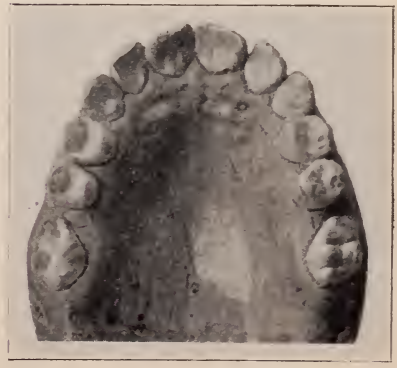

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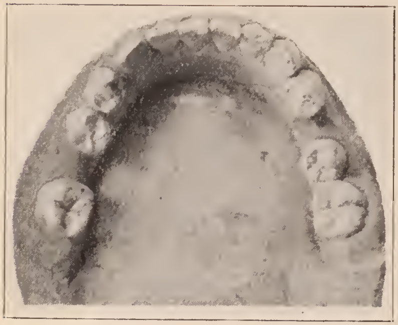

III. 3 b.

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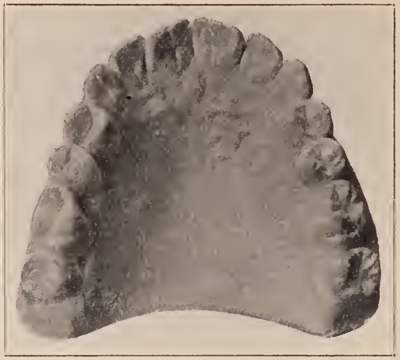

III. 4 a.

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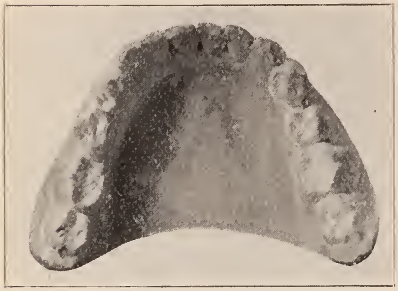
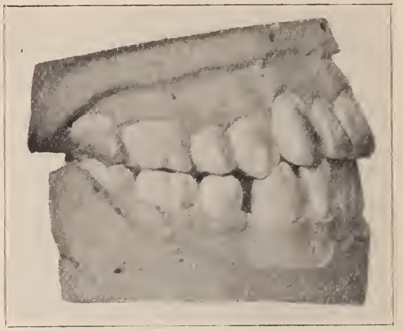


III. 4 b.

Tab. VI. Fig. 10.



III. 4 c.

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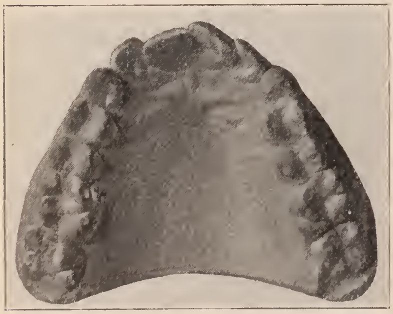

IV. 1 a.

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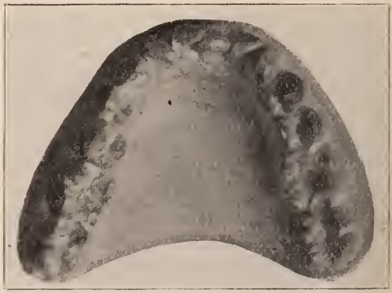

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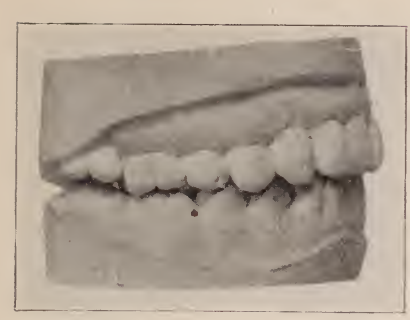

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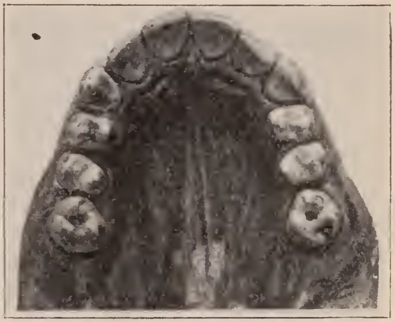

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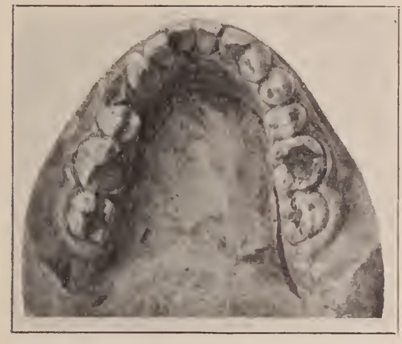

VI. b.

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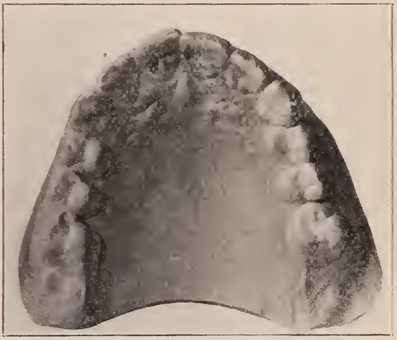

V. 2 a.

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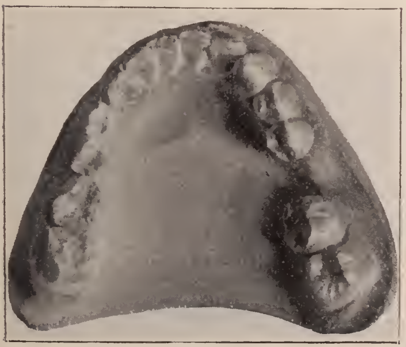

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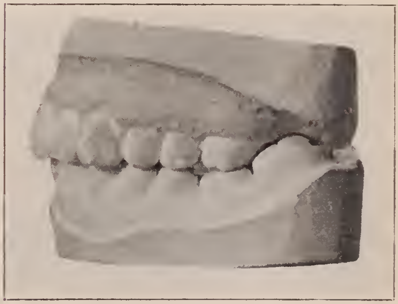

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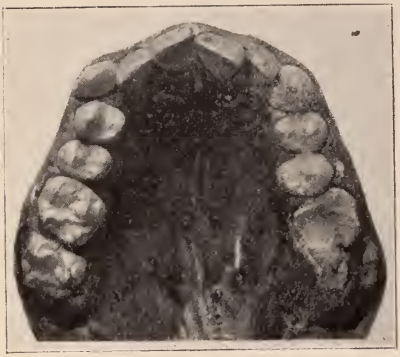

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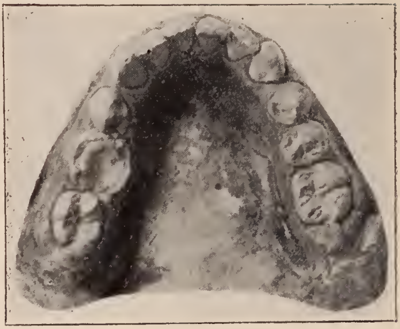

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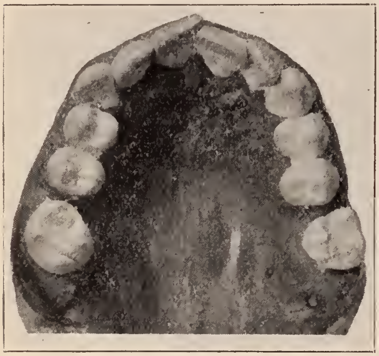

VI. 2 a.

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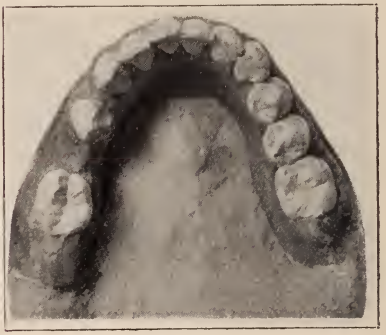

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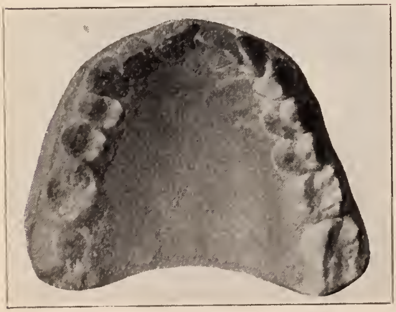

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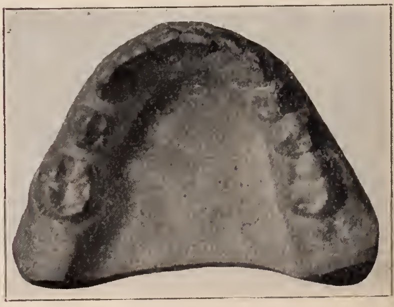

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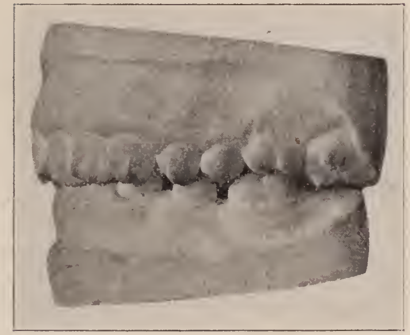

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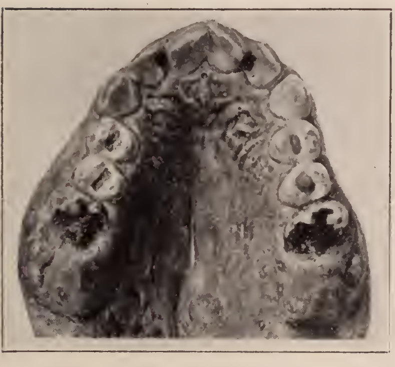

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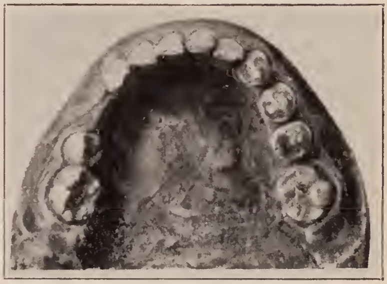

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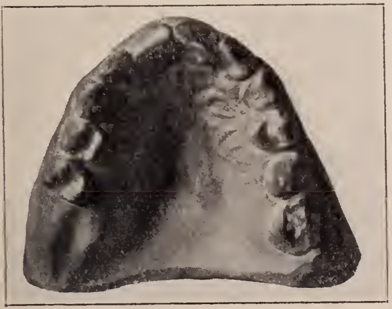

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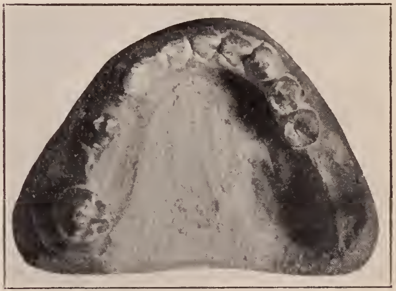

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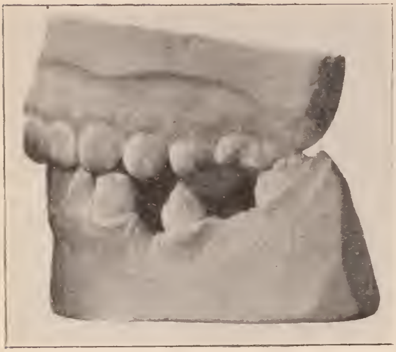

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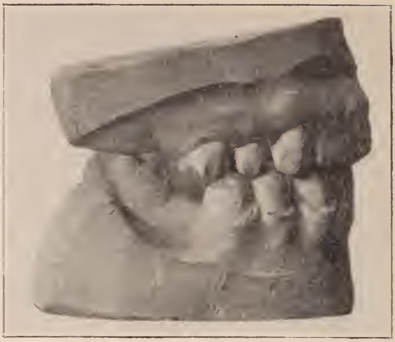

VII. 2 d.

third molars into the place of the second. *All the teeth are placed very closely.* If we draw a line across the jaw, just in front of the wisdom teeth on Fig. 8, and a similar line just before the erupting second molars in Fig. 3, then we can show by measuring that the upper jaw anterior to these lines is absolutely of the same size on both figures. As the *second* molars are considerably *smaller* than the extracted *first molars,* whose place they occupy, and the *third* again *smaller* than the *second,* the patient's mouth *is,* therefore, *undeniably smaller* now, at *the age of 33½ years, than it should have been at the time when the second molar was completely erupted,* that is, about *13 or 14 years,* had the first molars *been retained!*

In the lower jaw there is still space between the two bicuspids on the right side, and on the left side, between the second bicuspid and the second molar, which *tilts* considerably forward.

Articulation unsatisfactory, especially if examined from the inner side.

Table VII.

Figs. 1, 2 and 3.

Case IV.—Miss Elsa B., sister of the two last.

(As this case is about like the two previous cases, only the result is here shown after about twenty years from the time of the extraction of the first permanent molars.) This case shows one of the best results that may be obtained after the extraction of these teeth. But on closer examination, we shall also find how meagerly our *purpose, to obtain room, has been fulfilled.*

The teeth stand *exceedingly tightly* together: it is almost impossible to pass a silk ligature between them. *Nearly all approximal surfaces have been filled* with large fillings, although the teeth are normally hard. The *compensation curve* has been changed into an almost *straight horizontal line.* The articulation, which, viewed from the outside, looks tolerably well, when seen from the inside, nevertheless leaves very much to be desired.

Table VIII.

Case V.—Miss E. R., age 14 years. The first molars in the upper jaw (Fig. 1) have evidently been removed some two years previously; second molars now almost in their places, although considerably rotated. In the lower jaw (Fig. 2) the first molars still remain. The left bicuspid stands somewhat outside of the line.

Table IX.

Same case 14 years later. In the upper jaw (Fig. 1) the third molar on the right side is erupted. On the left side, on the contrary, it has *failed to show.* The size of the jaw, consequently, on that side at least, unchanged. In the lower jaw (Fig. 2) the first molars have been removed. On the left the bicuspids have come into line. Second and third molars are in respectively the first and second's places. The third molar has, on account of the absence of the corresponding tooth in the upper jaw, elongated *so much* that it *bites against the gum* over the tuberosity.

On the right side the second molar has, by reason of the occlusion with the opposing teeth, been *prevented from occupying the place of the first molar.* Moreover, it has been *tilted forward,* and especially *inward so much* that it articulates with the upper tooth, not with its masticating surface, but *with its buccal face.* Nevertheless, the patient is satisfied, and considers the result a success!

Table X.

Case VI.—Miss A. S., age 14 years. In the upper jaw (Fig. 1) the anterior teeth are considerably crowded; on the right side the first molar is sound, but on the *left* it is badly decayed. In the lower jaw (Fig. 2) the *right* first molar has been so early extracted that the second molar has now taken its place.

On the left side the first molar is very badly broken down, just as in the upper jaw. Through this the bite has been lowered so much that the gums around the second molars, which are just appearing in each jaw, touch when the jaws are closed. The remaining three first permanent molars were then (February, 1888) extracted.

Figs. 3 and 4.

Show the result of that operation fifteen and one-half months later. The crowding of the anterior teeth in upper jaw is somewhat improved, and the case *seems* to promise a pretty good result of the operation.

Table XI.

Figs. 1, 2 and 3.

Same case, thirteen years later. In the upper jaw the crowding of the anterior teeth is about the same as in Table X, Fig. 3. Second molars have taken the place of the first, the right one not inconsiderably rotated. Room is consequently *not* gained. The wisdom teeth have erupted, but, lacking antagonism, they have, especially the right one, *tilted buccally,* so that the *lingual cusp presses down on the partially retained third molar.*

The teeth are *very tightly pressed,* and have *fillings on every approximal surface.*

In the lower jaw (Fig. 2) the conditions are still more sad. On the right side the wisdom tooth, as just stated, has been retained, so that only *part of a cusp* is *above the gum.* On the left side, *neither the second bicuspid nor the wisdom tooth has erupted,* the first bicuspid having a wide space on either side.

The articulation and thereby the *masticating ability poor.*

This case shows again *how little we can judge the lasting results of such an operation,* and that we *cannot always rely on the eruption of teeth that have not shown themselves, especially not on the wisdom teeth.*

Table XII.

Case VII.—Miss H. B., age 16½ years. The upper jaw (Fig. 1) somewhat saddle-shaped, with the teeth crowded. The "first" (second?) badly decayed molars were extracted. In the lower jaw (Fig. 2) the first molars evidently extracted earlier. The first bicuspid on the left side missing.

Table XIII.

Thirteen years and eight months later. Position of the anterior teeth and bicuspids in the upper jaw (Fig. 1) is practically *unchanged.* On the left side has the "second" (third?) molar taken the place of the "first" (second?), somewhat *rotated* and touching the *disto-lingual angle* of the *rotated* second bicuspid. On the right side there are *no molars.*

In the lower jaw (Fig. 2) the conditions are still worse! On the left side the *first bicuspid* is *still missing.* The second has moved forward, and thereby *rotated,* so that its *buccal surface* is *directed backward. Second molar missing.* The third molar is erupted, although *not of any use* for mastication, as it has no antagonist.

On the right side, just as in the upper, *no molars are to be found. Mastication* consequently performed by *the anterior teeth,* and *the bicuspids on the right side.*

In this case it can be questioned whether the operating dentist has taken the second molars for the first, or if he has in any case extracted them, expecting that the third molars would replace them, an expectation that, as we have seen above, *is not always fulfilled.*

REGULATING PULPLESS AND PYORRHOEA DISEASED TEETH.*

By Calvin S. Case, D. D. S., M. D., Chicago, Ill.

The question of moving with a view of regulating pulpless and pyorrhoea diseased teeth may be considered one of some importance to the general practitioner whose experience in modern methods of regulating is more or less limited.

There seems to have been in the past, and still is a prevailing opinion, that operations of this kind are very questionable. Nor is this to be wondered at when we consider the methods that have been employed for the regulation of teeth, prominently among which have figured rubber plates, to which were attached rubber bands and ligatures that were allowed to penetrate far beneath the borders of the gingivæ, press upon the peridental membranes, and in many instances extend and rest upon the very borders of the alveoli. These influences, together with the instability and indefinite magnitude of the force applications, with the impossibilities of cleanliness, setting up degrees of inflammations in the surrounding tissues and with sufferings wholly unknown to those to-day who employ more scientific methods, naturally created opinions that may now be relegated to the past.

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*Read before the Odontological Society of Chicago.

Moreover, after the teeth were regulated and attempts were made to retain them with a plate—and other imperfect methods that I am sorry to see so frequently employed in these days—which did not afford the possibilities of perfect stability and cleanliness so necessary to the health of the tissues at this time and final restoration of the sockets, it is passing strange that far more deaths of pulps and pyorrhoea cases were not produced from originally healthy condition.

In this connection I am constrained to say that a large proportion of dentists who essay to treat extensive cases of pyorrhoea alveolaris when there is a general loosening of the affected teeth underrate the importance, as a preliminary to treatment, of attaching to these teeth an appliance that will hold them relatively still, afford free opportunities for treatment and perfect cleanliness, and one that can be worn continuously during the term of treatment and restoration without injury to the teeth, interference with mastication or disgust at its appearance.

Even during the process of regulating teeth, the above conditions are of the greatest importance. Whenever it is possible to do so and especially when considerable lateral movement of the crowns or roots are required, the teeth should be held in the stable grasp of the regulating apparatus with no movement other than that produced by the positive and perfectly controlled force of the machine.

With these conditions fulfilled, I can see no reason why pulpless and otherwise healthy teeth should not be moved the same as others, and even roots which support crown dentures. The root in either case is no more or less than a medium through which the machine performs its real work, that of causing the resorption or bending of the cancellous structure of the alveolar process.

I have regulated any number of pulpless teeth, to many of which were attached artificial crowns, with movements and conditions that did not materially vary from those having healthy pulps.

Under this head I present for your examination the models of a case taken before and after treatment. Mrs. D., æt. 24. Open bite with upper protrusion of the crowns and retrusion of the roots.

Commenced regulating January, 1900; finished March, 1901. The decided depression of facial contours over the apical zone, especially upon the left side, demanded a considerable forward movement of the roots in that region. All of which was successfully accomplished and the teeth brought to a normally upright position with the well-known contour-protruding apparatus.

By carefully examining the models of this case it will be seen that the upper central crowns are artificial, and Logan crowns at that, which to-day are as perfect and with roots and gums as healthy as when the case was commenced. The left upper first bicuspid is also a crowned root. This case is offered as a fair sample of many in my practice.

In regard to the regulation of pyorrhoea diseased teeth, I wish emphatically to say that if all calcareous deposits on the roots of the teeth are removed and followed by proper methods of regulating and retention, the operation will prove one of the best of remedies for the disease, and from my experience in a large number of cases seems to promise permanency of cure, providing always that the original cause does not recur.

This may possibly be accounted for in the setting up of an active inflammation, more or less continued, to take the place of the dormant and more inactive conditions. Moreover, the probable production of just that form of irritation and inflammation which causes under ordinary conditions the breaking down and inscription of old surroundings and the taking on of new, may also carry with it diseased germs and possibly dissolved products of irritating deposits. In evidence of my work along this line, I wish to offer for your examination three cases recently terminated.

Under this head, Case I is that of a woman thirty-seven years of age. The treatment was commenced March, 1900, and finished April, 1901. The irregularity shown in this case, which consisted principally in a decided protrusion and partial extension of the left central incisor, was caused by pyorrhoea, the disease having attacked nearly all the upper teeth with the usual symptoms. The root of the left central was considerably exposed on its mesial aspect, due both to the partial extension of the tooth and to absorption of the surrounding process and recession of gums. When this was forced back into its socket and the other teeth retruded to alignment, accompanied with a thorough removal of all calcareous deposits and finally followed with a proper retaining appliance, the case assumed an unusual degree of healthiness that seemed to promise permanency of cure.

Case 2 is that of a Miss, 17 aet. Commenced treatment June, 1900; finished, March, 1901. As in the former case, the irregularity was caused wholly by pyorrhoea, and its action upon the teeth quite similar, see Case 1. This case is interesting in that it was treated for some time by a prominent New York dentist whom we all know, and who finally advised the extraction of some of the front teeth, which in his opinion were beyond the possibilities of restoration and cure. Dr. Gilmer of this city, who referred the case for regulation and who was kept in touch with its progress through his part in the general treatment, will attest to the remarkable growth of new interproximal gingivæ.

Case 3 is that of a woman, aet. 35. Commenced treatment March 21, 1900, and finished March 8, 1901. The irregularity which produced a decided facial deformity, as shown by the face model which I here present (see Fig. 3), was from three causes. First, an original inherent protrusion of the upper. Second, years ago the lower incisors were removed and replaced with a gold plate denture, which in time expanded the arch so far it had become necessary to place six teeth in the plate to fill the space (see Fig. 5). Third, a severe and continued pyorrhoea, attacking all the upper teeth and which had resisted the efforts of some of the best dentists who from time to time had the case in charge, had caused the original protrusion to become emphasized by tipping the crowns of the anterior teeth forward at a decided labial inclination with the usual wide interproximate spaces and partial extension. (See Fig. 6.)

In the course of treatment the lower arch was properly contracted and retained with a bridge denture attached to cuspid piers; while the upper first bicuspids were extracted and the anterior teeth retruded and intruded, with a result in the restoration to seeming health of the tissues and a correction of the dental and facial deformity, which marks this case among the most satisfactory of my practice.

THE MANAGEMENT OF CHILDREN'S TEETH.*

By E. Noyes, D. D. S., Chicago, Ill.

The most successful management of children's teeth should begin early, before they have any trouble with them. To accomplish this it is well to give such suggestions and advice to their mothers as may lead them to give attention to the teeth pretty constantly from the time they appear; for the purpose of cleanliness, by the use of a brush with some dentifrice, doing it for the children till they are old enough to accomplish it properly and regularly for themselves; and watching for the first appearances of decay in the occlusal pits or upon the proximal surfaces. Every encouragement should be given for the bringing of young children for the examination of their teeth at regular and rather frequent intervals, and without waiting for any complaint of pain. If children are so fortunate as to go to the dentist several times with nothing more important to be done than the scouring off of green stains, or making small occlusal fillings, they lose their dread of coming and learn the valuable lesson that excruciating pain is not always and surely associated with every visit to a dentist. If they should come many times during childhood with little or nothing to be done the very important end will be accomplished, that they acquire the habit of having their teeth in the care of a dentist and realize the necessity of seeing him often enough to make his care and responsibility effective.

It must be admitted, however, that all the instruction and influence we are able to use will not bring any very large proportion of the children to us in such desirable and happy way. Usually it is pain, more or less severe, that causes the first appearance of the little child in a dentist's office. Of course in these cases the first consideration is to relieve the pain and arrange for the child's comfort, till the next visit, if the conditions present admit of it and the child can possibly be controlled so as to accomplish it. The least possible amount of pain should be inflicted and the work should be done quickly. It is often advisable to amuse a child, talk to him, get acquainted with him and only pretend or make believe do something to his teeth at the first sitting. This may do in many instances, but not if the child is in pain. Any way, most children will understand the performance perfectly, and it is a question whether you are not more likely to lose the child's confidence than win it, or whether he may not get the idea that he can "work you" and waste your time to suit himself. When you do get down to business it is doubtful whether he will behave any better as a result of such attempted preparation.

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*Read before the Northern Illinois Dental Society.

It is true in a general way that the same principles and methods apply to the treatment and care of children's teeth as to those of older people, but there are a few important exceptions and modifications which require our consideration, remarking, however, that those matters which have similar application to people of all ages, and which constitute a large part of the subject, need not be discussed to any great extent in this paper.

First, as to the temporary teeth. The sittings for these operations should be short as the accomplishment of some one operation will permit, unless the convenience or necessity of those who bring the child make it important to do more, in which case the child should be rested between operations, if possible. Cavities should be prepared carefully and thoroughly, if practicable, remembering that the pulps are large and easily exposed in proximal cavities. *Everything* has to be subordinated to the child's power of endurance and self-control, or, sometimes, your power or that of his friends, to control him. The best child patients will sit quietly and let us go on with our work until they are really hurt, and then will cry, but keep quiet enough to let us proceed, and will quit crying when we quit hurting them. These are not likely to suffer from shock afterward, and are usually healthy children. A very few will sit heroically and neither move nor cry, though severely hurt. These are in more danger from shock and need careful watching, and the sittings should be made short and the greatest care taken to hurt them as little as possible, though there is nothing in their behavior to prevent keeping them a good while. The severe nervous tension of their heroic efforts to bear pain without complaint makes them much more likely to receive harm than are those who just take things as they come and cry freely whenever they are hurt, as is natural for a child to do. These heroic children are very few in number, but when we do get them we should not fail to respond to their fortitude with the admiration and sympathy they deserve, and give them the most careful treatment we ever give anybody, for they are more likely than any others to receive serious injury from shock. Sometimes children are so frightened and have so strong an expectation that they are to be hurt that sensations not really painful become really so to their consciousness and imagination, aroused by the expectation of pain. Such children are sometimes helped by a little talk and explanation, assuring them that most of the work will not be painful and that the painful part of it will be very brief and not very severe, and interesting them to watch and discriminate between the sensations they can feel, but which are not painful, and those that *are really* painful. There may be a few whom it is better to tell just when you are about to hurt them, but I think that is usually bad policy with either young or old. It is much safer to say occasionally, "Just now I am *not* going to hurt you," and let the painful parts of the operation come without warning. They are sufficiently aware of the likelihood of being hurt.

The hardest cases are the spoiled children (and they are seldom healthy, though we may find one that is), who have never been subjected to any reasonable control and have consequently never acquired any power of *self*-control; many of them have been deceived constantly so that they expect it and will not believe anything you say to them, and will struggle and fight and get away from everything you try to do for them. I have seen a few for whom nothing could be done till they had been convinced, by absolute and forcible control, that the operations were going to be made, regardless of their opinions or wishes about it, and in spite of any resistance they could possibly offer. Many such children will settle down after one lesson and behave fairly well subsequently. Of course force should never be used to control a child, except in the presence and with the help and consent of one of its parents or a nurse who has undoubted authority from the child's parents.

The choice of materials with which to fill the temporary teeth is to be determined by circumstances and relations so very different from those in which we find the permanent teeth, that a different set of rules must be observed. The only temporary teeth that need ever be filled with gold are those that are retained till mature age.

Occlusal cavities in the molars may be filled with tin or Robinson's fibrous filling, which is almost entirely tin, or amalgam, and red base-plate gutta-percha will often do excellent service. Proximal cavities in the molars may sometimes be filled with amalgam, but oftener with gutta-percha, and it is good practice to make one filling for two cavities (mesial and distal in adjoining teeth), filling both cavities and the space between. Gutta-percha is the most suitable material for such double fillings. Amalgam does not work so well, being more likely to be broken loose in one or both of the teeth. Considerable experience and observation seems to indicate that the oxyphosphate of copper, made by Dr. Ames, is much superior to the oxyphosphate of zinc, wherever its black color can be tolerated.

These proximal cavities may often be filled with phosphate cement, which I think is better done by individual fillings, and not bridged across in a double filling, as would be done if gutta-percha were used. Making the filling double is chiefly for retention and the sticky phosphate does not need the extra support. Proximal decays in the temporary front teeth, if seen early, can often be well treated by separating the teeth with a file. They are replaced five or six years earlier than the molars and their premature loss is a less serious calamity. If they are filled the sticky phosphate cement is the best material. After separating with a file these front teeth may be treated with nitrate of silver, its black color being of course an objection. Nitrate of silver may be used to advantage in many places for temporary teeth, but never unless there is good thickness of sound dentine over the pulp.

The treatment of exposed pulps and alveolar abscesses is not very different in essential particulars from that appropriate to the permanent teeth, except that arsenic should not be applied to the pulp of a temporary tooth, after the absorption of its root has begun. They can usually be kept quiet and gradually destroyed by applications of 95 per cent carbolic acid,covered securely by a gutta-percha filling, and left a considerable time. Dr. Goddard, in American Text-Book of Operative Dentistry, says that ammonia may be used as a domestic remedy for the pain of exposed pulps in temporary teeth, applied on small pellets of cotton, and that repeated applications will destroy the pulp. Alveolar abscesses will usually get well if the pulp chambers and root canals of the affected teeth are cleansed and disinfected. The rule that rubber dam should always be applied when anything is done in a pulp chamber or root canals should be followed as closely as possible, but will necessarily have more exceptions as regards temporary teeth than permanent ones. It has been advised by some to fill the pulp chambers of temporary molars and keep the filling out of the root canals. I believe this is mistaken advice, and feel sure that more harm is likely to follow from leaving root canals unfilled, than can result from filling them as well as circumstances permit. The methods and materials for root fillings are the same as for permanent teeth.

The effect of the presence of the deciduous teeth upon the development of the jaws and maintenance of the first permanent molars in their proper positions is important enough to justify all efforts possible for the retention of the temporary teeth till the proper time for shedding them, and often justifies the retention of the roots of the temporary molars after their crowns are gone.

It needs no argument to show that the care of the permanent teeth of children is far more important than of the deciduous ones, and the most important and difficult part of the problem relates to the first molars. The incisors, the second molars, and especially the bicuspids often present difficulties equally great, so far as relates to the teeth themselves, but usually at a little later time, and each year of time diminishes the difficulties incident to the management of the children and the teeth.

The first molar has been a "bone of contention" in the dental profession for about forty years at least, and there has always been a small number of practitioners with very positive opinions, who have contended that they should be removed in a large proportion of cases, almost they have put them under a general condemnation and required them to plead for their lives against a presumption of uselessness and injury, instead of being "considered innocent till proven guilty." Considering this question only in the very briefest manner, I shall take the other side of it and express the opinion that all possible efforts should be made to preserve the first molars unless very sound and positive reasons are apparent for removing them. The most decisive reason is the loss of their pulps before the second molars are erupted, because teeth pulpless at so early an age are about sure to be lost in a few years, and the best time to lose the first molars is just before the eruption of the second, which will usually occupy their places and provide better opportunity for the development and eruption of the wisdom teeth. Almost always two or four should be removed if one has to be. The retention of the first molars till the second are ready for immediate eruption is very important, because they are the only teeth that are strong and large enough, and so placed in the jaws as to be able to maintain the articulation, and preserve the proper relations of the upper and lower jaws, and consequently the symmetry of the face, during the period while the temporary denture is being removed and replaced by the permanent teeth. Lacking the support and resistance of these teeth, the powerful jaw muscles, acting upon the teeth while their roots are being developed, are likely to produce various degrees of irregularity and deformity, most frequently and naturally an undue overlapping of the front teeth and an imperfect development of the roots and alveoli of the bicuspids and second molars, resulting in a too near approach of the jaws to a greater or less extent. If the first molars can be kept till the second are ready for immediate eruption, or are already in sight, the incisors will by that time be sufficiently well developed to withstand the extra pressure that will come upon them in consequence of the loss of the first molars, in many cases at least, during the short time that remains until the bicuspids and second molars are fully developed.

The orthodontia specialists are best able to discuss the question of removal of these teeth for "regulating." I will only say that it sometimes fails to accomplish all that is expected from it, and sometimes results in contracted jaws and pinched faces, that would have been better if they had received the attention necessary to bring the whole number of teeth into symmetrical relations.

Let us stand then, upon the general proposition that every effort is to be made for the permanent preservation of the first molars. (Recognizing, however, that, for various reasons, there will be a considerable number of cases in which two or four of them should be removed.) All our families should be made to understand that the dentist ought to see these teeth very soon after their eruption, and they should be closely watched afterward. If the mesial surfaces decay while in contact with the temporary molars, they should be filled during the few days' interval between the loss of the temporary molars and the complete eruption of the second bicuspids. It is seldom that gold fillings can be made at this time, though I have sometimes done so.

Oxyphosphate of copper, or oxyphosphate of zinc, or gutta-percha, should commonly be used till childhood is past. Defects of occlusal enamel should have attention at the earliest possible moment, before they become sensitive from the beginning of decay. Dr. C. N. Johnson recommends to dry these crevices and press oxyphosphate of zinc into them with the finger before the gum is entirely off the occlusal surfaces, if necessary. I judge that oxyphosphate of copper is better and will answer admirably for this purpose.

Three reasons occur to me for postponing gold fillings till childhood is past, though I have made many, and shall continue to do so, for children between seven and twelve years of age.

First, it is not always so easy to determine the full extent of enamel fissures as it will be a few years later. Second, many children will not bear well and ought not to be required to, the longer time, the more thorough cutting out of cavities and the hammering of the gold. Third, the greater thickness and consequent elasticity of the peridental membranes in childhood as compared with later years causes them to bear malleting less satisfactorily, and the thick membranes yield to so much greater extent that considerably heavier blows, or else a greater number, are required to effect the same condensation of gold. For these three reasons chiefly, gold fillings made for children are far more likely to be imperfect and require subsequent renewal than those for people of more mature age. It is to be noticed that practice guided by such considerations is not very different from the practice based upon the old and rather persistent superstition that "young teeth are too soft to receive gold fillings successfully." Of course it is better that practice be determined by true reasons than mistaken ones, even though the conclusions as to the operations to be made are similar. This is illustrated in these matters by the persons of mature age whose teeth are prone to decay and specially need the best gold fillings that can be made, but who tell us their dentist says their "teeth are too soft to stand filling with gold," the supposition being that the teeth of these persons have not hardened with advancing age as they should have done.

Attention should be paid to the time when the roots of the first and second molars are fully developed. Ordinarily first molar roots cannot be safely filled before eleven or twelve years of age, and twelfth year molars not till about sixteen. If pulps are painful, or exposed before that time, every possible effort should be made to quiet and protect or cap them, so as to preserve them alive at least till their most important function is fulfilled by the completion of the roots. Fortunately the lives of pulps are much more vigorous and persistent previous to this time, and efforts for their preservation more likely to succeed. If pulps are lost before the roots are completed it only remains to determine whether the teeth should be immediately removed or whether the welfare of the remaining denture or the appearance of the face will be better for keeping them a while longer, and if so whether the benefit will be great enough to compensate the trouble of operating upon them. They will inevitably be lost in a comparatively short time. They may be made to last a few years.

Much more might be said about the filling materials to be used in childhood in the cases where gold, for the reasons mentioned, or others, is ruled out. Tin in the form of Robinson's felt has proved very satisfactory in my practice for twenty years or more, but its use is confined to occlusal cavities when small, and buccal pits of lower molars. In the front teeth the oxyphosphate of zinc has been most satisfactory, but it needs watching. Wherever its black color is not objectionable, Dr. Ames' oxyphosphate of copper has done remarkably well, so far as I have observed it.

INTERNATIONAL DENTAL FEDERATION.

By Dr. E. Sauvez, Paris, France.

As intimated in an article published in one of our previous numbers with reference to the International Dental Federation, the work of its executive council, just holding its first session at London and Cambridge, has been of very great importance.

All the nine members of the council were present at this meeting, showing that every one of them who was elected at the last General Meeting of the International Dental Congress of 1900 did conscientiously perform the duties imposed upon him through this nomination. Only one of the members, Dr. Pichler, of Vienna, was missing at the roll call, who, on account of the poor condition of his health, was unable to accept his nomination, but had asked his colleague, Dr. Franck, also of Vienna, to take his place.

Owing to the impossibility of giving in this short article all the details of the different phases of the work of the council, we will content ourselves to enumerate here only the principal decisions taken during the different meetings held on the 4th, 5th, 6th, 7th and 8th of August, at London and Cambridge.

DECISIONS.

1st. Adoption of minutes summarizing the work done by the bureau of officers during the period of 1900 to 1901.

2d. The resignation of Dr. Pichler as a member of the council was accepted and regrets expressed.

3d. Dr. Franck was admitted as a member of the council for the session of 1901.

4th. The report of the secretary-general regarding the organization of the committee on instruction is approved.

5th. The resignation of Dr. Rosenthal, of Brussels, was not accepted.

6th. The report of the secretary-general to the executive council was approved.

7th. Nomination of the members of the executive council as members of the committee on instruction.

8th. The admission of Drs. Bryan, of Bale, Zsigmondy, of Vienna and Haderup, of Copenhagen as titular members of the committee on instruction.

9th. Vote of thanks to the British Dental Association, to the presidents and secretary of this association, and also to the University of Cambridge and the Royal Temple Yacht Club, who had offered to the Federation the hospitality of their apartments.

10th. Election of the bureau of officers of the executive council. Dr. Godon remarks that in view of the international character of the meeting it seems absolutely necessary to him to change the president every year. The members present do not accept this way of looking at the matter, and think that the organization of the federation being still under way of formation, it would be necessary to keep the same president. The ballot gives the majority of the votes to Dr. Godon for the presidency. Dr. Godon refuses. The second ballot is taken and gives the same result; consequently Dr. Godon is elected president of the executive council; Drs. Cunningham and Forberg, vice-presidents, and Dr. Sauvez, secretary-general.

11th. Nomination of Dr. Pierson, of Toronto, Drs. Viau and Choquet, of Paris, Dr. Weiser, of Vienna, Drs. Baruch, Quarterman and Huet, of Brussels, Dr. Witthaus, of Rotterdam, Dr. W. Dall, of Glasgow as associate members on the committee of instruction for the session.

12th. The executive council will meet at the invitation of Drs. Forberg and Forsman, Sandstedt and Christiensen, in August, 1902, in Stockholm, at the Annual Meeting of the American Dental Society of Europe.

13th. Adoption of the principle of appointing a commission of public hygiene.

14th. Appointment of Drs. Forberg, Franck and Cunningham as members of this commission for one year, with the order to present a report at the next meeting of the executive council.

15th. Dr. Franck charged with the preparatory work of this commission.

16th. The International Dental Federation is represented through an executive council, composed of nine titular members elected by the Congress and representing the different nationalities or groups of nationalities.

17th. Adoption of the principle of nominating associate members of the Congress.

18th. Adoption of the proposed rules worked out by the subcommittee appointed for that purpose.

19th. These rules are adopted for one year only and shall be revised at the next session.

20th. The question of the next Congress shall be discussed at the meeting at Stockholm.

21st. The Russian National Committee shall be invited to nominate one associate member for the executive council and also one member for the committee on instruction.

22d. The officers of the executive council are authorized to invite these two members to the meeting at Stockholm.

23d. The Austrian National Committee shall be invited to designate for the next session one member for the executive council, to replace Dr. Pichler, resigned.

24th. The Council congratulates this committee for having delegated Dr. Franck to attend the meeting.

25th. The National Federations are invited to confirm the powers of their delegates or to appoint representatives for the next session.

26th. The officers of the executive council are invited to present at Stockholm referring to the proposed modifications of the number of the members of the council according to the different countries.

27th. The members of the council shall send to the secretary-general a report of the condition of the profession in every country with regard to legislation, number of dentists, schools, societies and journals which are concerned.

It is easy to see by the enumeration of all these decisions how well the time of the sessions was taken up; up to this time the Council had no rules nor regulations, and the principal work of this meeting consisted in the making of by-laws in accordance with the views expressed by the different members, and based upon a proposition made and submitted by a committee composed of Drs. Godon, Cunningham and Sauvez, who had met for that purpose several times during the year. These regulations, which will be published later on, and which take into account the legitimate claims of the delegates of the different nationalities or groups of nationalities, will form for the present year a guide, a working plan, for the next session in Stockholm.

Our friend, Dr. Roy, has told better than we could of the kindly reception given by our English colleagues to the members of the Federation and the French delegation with whom they were brought in contact on the occasion of the International Dental Congress of 1900. We have all come back full of enthusiasm over the receptions, banquets and cordial hospitality of our English colleagues.

We will now close these lines, which are simply written to keep the readers of the *Odontologie* posted in regard to the principal results of the labors of the Executive Council of the International Dental Federation.

We are very glad to see that the session of 1901 was such a brilliant one, because the question of the International Dental Federation has occupied our mind since the beginning of the organization at the International Dental Congress of 1900, and we state the fact that our dream has become a reality. The Federation has been born in good health; is more than a year old, and has just taken her first steps. She has been christened at the old University of Cambridge and the regulations which she has given herself will assure her a long life.

PROCEEDINGS OF SOCIETIES.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at the Victoria Hotel, April 16, 1901, with Dr. L. L. Davis in the chair.

Dr. C. S. Case read a paper on the "Regulation of Devitalized and Pyorrhoea Diseased Teeth."

Dr. George B. Perry was called on to open the discussion. He said:

I am thoroughly taken by surprise in being asked to open this discussion upon the essay just read, and I feel that my experience along this line of work does not justify my attempting to do so. While I am familiar with the regulation and treatment of pyorrhoea and devitalized teeth, this paper has been a revelation to me, as the transformation shown in the models of the teeth and facial casts clearly indicates the possibilities of this work in the hands of so capable a practitioner, and the extent to which Dr. Case has carried it suggests to us the necessity and advisability of putting forth our best efforts to preserve the natural teeth when it is consistent to do so. I wish to compliment him very highly upon the new thoughts and methods of procedure advanced, and it is through his courtesy that I am permitted to listen to this instructive essay. I feel the evening has been very profitably spent in his company and yours. In harmony with his thought as expressed, I will mention a retaining appliance which I conceived for the purpose of making more rigid teeth loosened by pyorrhoea alveolaris. It is what I have seen fit to term a skeleton bar bridge, and I will endeavor to describe it to you in detail, regretting that I have not the model with the bridge to show you the way it appears when made and its manner of application. I have never seen anything like it, and it occurred to me from the fact that necessity is the mother of invention. I had a case where a number of teeth in the upper jaw were loose from pyorrhoea. I started to treat the teeth, but the patient, a man, was difficult to get hold of, owing to his profession, and I thought if I could retain the teeth in the right position the treatment for pyorrhoea would be much more satisfactory. The teeth in question were a left superior first and second bicuspid and first molar. The first move I made was to devitalize them, for I believe from experience devitalized pyorrhoea teeth progress more favorably than to permit the pulp to remain. The pulp does not give the same vitality to the tooth in the pyorrhoeal condition that it does in its normal condition. I cut a slot through the sulci of the bicuspids and across the occlusal surface of the molar in a straight line from the mesial aspect to the distal as straight as I could; then I took No. 18 gauge iridio-platinum square wire and drilled an opening into the central portion of each tooth communicating with the palatal canal in the case of the molar and the regular canals in the case of the bicuspids, using No. 16 iridio-platinum wire for the post in the first molar, and No. 18 gauge for the bicuspids. I got my location for the posts, after having bent the cross-bar to fit in the slot as accurately as possible from a model made from an impression. Then I placed the posts at right angles, so they would go into the teeth for which they were intended, soldered them together, and I was now ready to put on what I call the skeleton part of the bridge. So far as I know, the idea is original. It bolts the teeth together firmly. There is no lateral, forward or backward movement, and the medicament for pyorrhoeal treatment will absorb more readily, and there will not be the irritation from biting and the up and down movement of the teeth from the pressure of mastication. The patient can occlude upon them without injury while the teeth are being treated. I cemented the bridge in, having made the slot a little larger than the diameter of the wire, cut away the cement, and filled around the bar with amalgam, so it would not disintegrate, as the cement would make a solid combination of the teeth protected by amalgam.

Dr. C. N. Johnson: I cannot allow this paper to go by without a word or two in connection with it. Dr. Case always has something new for us, something to set us to thinking about, and I have been much impressed with his paper. The more I mingle with progressive men in the profession, the more I am convinced that dentistry is developing marvelously. Last evening the question came up with a small party of friends with whom I was talking as to a proper definition of dentistry, and the statement was made that a definition of dentistry five or ten years ago would not be adequate of dentistry to-day. To-night we have had a very strong corroboration of that fact. It seems that there is no limit to the possibilities of the ingenuity of a man who starts out on a specialty as Dr. Case has and studies it from different points of view like he has done, and I am encouraged to-night by his report of cases, and particularly by the examination of his models. It is a great revelation to notice the changes that have been made in these models and the change of the facial expression. All of these things should encourage us to believe that if difficult cases of this kind are placed in proper hands, they will be greatly benefited. His report of cases regarding the improvement of the pyorrhoeal condition is just along the line I should expect it to be. I should expect that kind of regulating appliance to hold the teeth rigidly in place and not allow movement, and the regulation changing the position would be beneficial in pyorrhoeal cases. I think it would bring about the stimulation that those cases require in many instances, and while the results have been a surprise to me, still I am inclined to believe everything and to see reason for it. I am very much encouraged indeed, and Dr. Case has my special thanks for bringing this subject before us in the able and lucid manner that he has.

Dr. Truman W. Brophy. When I was a student, Professor Garretson made the statement that the most important department of surgical practice was oral surgery, because it had to do with the most conspicuous part of the body. This is surgery that we have heard to-night. If this is not surgery, what is surgery? Any man who is capable of producing the changes that are here clearly outlined in these two figures is little less than inspired. In the olden time this would be called miraculous. To-day we see it accomplished, and we look upon it as a natural result brought about by an ingenious man. As I looked at these two faces, as the models came into my hands, and then looked at the conditions that Dr. Case was confronted with at the outset, I was really spellbound. In a measure, I was dazed in the thought that such marvelous results could be accomplished. Look at the face of this model from both standpoints. The profile of it is absolutely ugly, repulsive in expression, with a mouth that is not capable of closing. In other words, the lips cannot be brought in contact without great effort. The face presents an ugly expression. Turn it so as to get more of a front view and the expression is not improved. On the other hand, look at this beautiful profile. It is really an ideal face. It is really the difference between a refined, cultured, Christian woman and a heathen in expression. I do not believe there is any one here who has studied these models as I have to-night and noted the changes that have been effected and how they have been brought about. Is there anything in the whole field of surgery in the treatment of ailments and deformities of the human family that can compare with work like this? It is the production of a beautiful face out of a hideous one. Look at it, gentlemen, and make your own comparisons. When I look at this work I am deeply impressed with what Dr. Case has accomplished, but I have never been so deeply impressed with his work as to-night. This outclasses anything that he has ever presented before anywhere, so far as the results are concerned. I am absolutely sincere when I say this. He has not taken the cases of young children whose bones are soft and whose teeth may be moved with impunity, but he has taken chances in working upon the disfigured face of a woman advanced far beyond youth, and the results accomplished are absolutely marvelous. It is not possible for any man to command language to properly express his admiration of such results and the marvelous changes that have been wrought.

I have nothing to say in the way of criticism, except that I marvel at these results, and I am satisfied that if the world at large were fully impressed with the results that are brought about by men engaged in this work they would consider the subject in a more serious way and accord to dentistry a higher place than many of them see fit to give us. This work is equal to the work of the greatest sculptors and painters. It is more than that. They put on canvas something; they hew from a block of stone something. Here is a change in the human face divine. It brings the countenance and expression to the highest ideal of beauty, and why should not such work be far more important to the human family than anything which is the imitation of a face upon canvas or in stone.

Dr. J. H. Woolley: I made a prophecy a great many years ago as regards a young man I knew at that time, although I mentioned it to no one. I knew that he would still retain his modesty, and yet would be heard from, and that man was Dr. Case. He has revealed to us to-night the results of a combination of science and art, but with all that he has made a close study of physics. He has studied the mighty potentiality of force and he has used that force in a modern way.

I recall a little circumstance that occurred many years ago at a dinner. Sitting on my right was a dentist and on my left a graduate of Ann Arbor. The dentist was relating how he was regulating some teeth, and after he had finished his explanation of how he was regulating them, the young man to my left (the Ann Arbor student) said to him, "Excuse me, Doctor, you have wasted a good deal of mechanical force. You have changed the position of the teeth, but you have lost a good deal of time by it. You have been prodigal in the expenditure of your force," showing that this young man had studied physics, philosophy and mechanics, while the dentist had not been a close student of these branches.

Dr. Case has shown you the results not only of physics and mechanics, but he understands also the composition of the human face. He had studied the correlation of the organs of the mouth to the rest of the organs of the face; he has observed the lines of depression and extension, and, further, how to round out a face according to the character of the individual. In making Beethoven's bust, no artist will put on the face of Beethoven the chin of Bill Sykes. It is a deeper study in working out the outline of the face to keep it in harmony with the character of the individual.

The point made by the essayist as regards the movement of pulpless teeth was that the way in which he moves them is by gentle force, but effective, and this would not destroy their healthy relationship to the jaw.

I endorse everything Dr. Brophy has said regarding this excellent paper. It seems to me it has proven in the different epochs of the world's history which can be named, that we are now in the midst of a dental epoch and I believe there are greater things yet to be accomplished by Dr. Case and others.

Dr. L. L. Davis: When the models of Dr. Case were passed around for inspection, and particularly the last case, my memory reverted to the time when I first met Dr. Case in the old Infirmary at the Dental Department of the University of Michigan, at Ann Arbor, in '82, when he was showing us how to make coffin spring plates and comparing it with his present method of doing things. Certainly it is a grand achievement, and such cases as these cannot help but place his name upon the scroll of those who have accomplished something for the dental profession. In regard to the movement of devitalized teeth, or those that are affected with pyorrhoea, I have not had very much experience with that kind of work. I have moved a few devitalized teeth, and have not had any bad results. I have not had an opportunity to see any cases of pyorrhoea in young persons such as have been reported in some of the papers that have been read before this Society. I do not do much regulating unless it should be simple cases in young patients which I feel I can handle. But the cases that have been reported to-night, models of which have been exhibited, show what the right man can do, and I am very glad to have had the opportunity of listening to Dr. Case's paper.

DR. J. G. REID: I have expressed myself on previous occasions in regard to the work in which Dr. Case is engaged. At a meeting of the Tri-State Society, held in Detroit six or seven years ago, I opened the discussion on a paper presented by Dr. Case at that time, in which I made the flattering remark, which I think is still in print, that he never said or did anything but what he could show what he had accomplished. He has been credited and discredited with performing operations, as you and I know, that were said to be impossible of performance, yet the fact of the matter is that when it came to the point he had the courage and manhood to show what he has done. That is one thing I desire to repeat more particularly than anything else, namely, that he is a man who does exactly what he says he has done.

DR. TRUMAN W. BROPHY: There is one unfortunate side to this whole subject, and that is that this work is not known as broadly as it should be. A knowledge of it is extending, and men who formerly knew nothing of it are now learning about it. Work like this cannot be accomplished in a few years or a few decades. It requires an immense amount of time and perseverance, so that those who require such services may receive them. I would like very much to have the matter that has been presented by Dr. Case to-night put in printed form, together with the models and casts of the jaws, having photogravures made of them so that they can be reproduced on paper. I should like to see the paper published as one of the contributions to the Odontological Society of Chicago. This society made its reputation on a monograph that was issued a good many years ago on the "Treatment of Pulpless Teeth," and some other articles have gone out from this society that have emanated from the best men in our profession, and while I have been in close touch with Dr. Case ever since he was discovered, I am free to state that this is the crowning effort of his life. These are not ordinary cases, and particularly the case of the woman advanced in years. It is simply a marvelous change in the features of a woman who is advanced in life, in whose mouth some of the most important teeth were absent, and in whose mouth the most remarkable changes have been wrought. It requires an immense amount of courage to start on a case of that kind and carry it through. I want to make a motion that this paper be published as a contribution to the Odontological Society of Chicago, and that suitable pictures be made of all the models and casts Dr. Case has exhibited to show what he has accomplished. There has never been anything like it in the history of dentistry so far as I know. If there has been, I have not heard of it.

Dr. Case (closing the discussion): I am completely overwhelmed, and certainly very much surprised because I did not expect to receive such an ovation. In fact, it was only a few days ago that I really made a choice of what I would bring before the society to-night. Almost on the spur of the moment I decided to select the subject of regulating pulpless teeth and pyorrhoea diseased teeth. I did not expect nor intend that it be put under the category of the regulation of teeth for the perfection of facial contours. In fact, it was almost the last moment when I decided to bring the face models of this one patient before you. My object was to show and demonstrate, so far as I could, the possibility and advantage of moving pulpless teeth, and the possible curative effect that might result from proper methods of regulating pyorrhoea diseased teeth.

Dr. Brophy has made some very complimentary remarks, which, coming from a man of his position, is very pleasant. But it seems to me he has done me altogether too much honor. If Dr. Brophy could have been present on other occasions of this kind when I have shown my work, or seen the cases themselves and examined them as carefully as he has some of the models this evening, he would have been more highly pleased, as they would have shown more remarkable changes in the contours of the face. But, as he says, in none of them have I accomplished the same results with patients of this age; although I am working on a patient at the present time who is nearly forty years of age, moving the roots of the teeth, correcting a decided facial depression of the cheeks and the middle features of the face by moving the roots and bones surrounding the teeth forward and laterally. I wish now I had taken a face model of that patient, because I see so much more improvement in her appearance than I had ever dreamed of. There is a much more decided change in the face than of the patient whose case I have brought before you this evening.

I am very much obliged to you for the reception of my paper, and I am glad I brought it before you.

I had hoped to receive from Dr. Brophy and others lengthier opinions and experiences relative to the real subject of the paper.

THE NORTHERN ILLINOIS DENTAL SOCIETY.

REPORTED BY HART J. GOSLEE, D. D. S.

The fourteenth annual meeting of the Northern Illinois Dental Society was held at Joliet Wednesday and Thursday, October 16-17. A splendid program had been prepared and an unprecedented attendance was recorded.

If any one ever harbored the opinion that the Northern Illinois was not a live, wide-awake, enthusiastic, progressive and hustling society, it would have afforded them a revelation to have been present and seen them transact business at this meeting.

The program of essays and clinics was conveniently short, but highly interesting; the dispatch and clock-like regularity and promptness which marked the transaction of business in general was refreshing; the enthusiasm and good-fellowship was geographically characteristic, and the entertainment features good.

In all it was one of the best meetings of the organization, and certainly an ideal two-day convention, which reflects much credit upon the executive officers and particularly upon the efforts of the chairman of the Executive Committee, Dr. C. J. Sowle.

While the program was largely representative of Chicago, the discussions were entered into so freely and were so lively, spicy and instructive that all were constrained to acknowledge that our country cousins were "strictly in it."

The meeting convened at nine o'clock Wednesday morning, and after the routine business of organization and the customary greetings, the annual address of the President, W. C. Bunker of Oregon, was presented.

In his address the President treated largely of the history and progress of the society since its organization in Rochelle in 1886, and concluded with congratulatory greetings upon its active, useful and successful life, and particularly upon its influence for good in the selection of members for the State Board of Examiners which would reflect credit upon the State, and the somewhat tarnished escutcheon of the profession in the State.

The discussion was opened by M. L. Hanaford and continued by S. F. Duncan and M. R. Harned, all of whom indulged in expressions of praise of the work of the society, and of pride in the fact that 17 of the original 22 members were still active; and in words regarding the State Board affairs that would bring a maidenly blush to Jim Reid's cheeks.

At the afternoon session a splendid paper on "The Care of Children's Teeth" was read by Edmund Noyes.

The discussion was opened by G. M. Brunson and continued by J. W. Cormany, J. E. Hancock, M. R. Harned, J. H. Woolley and C. E. Bentley.

The paper was replete with conservative and instructive advice and suggestions, and was characterized throughout by a strong plea for the necessity of the education of the little ones in the scrupulous observance of prophylactic measures, which elicited a highly interesting discussion.

Dr. Bentley spoke at some length of the efforts made to secure the appointment of capable dentists in the public schools, and to such as being the only effective method of reaching, impressing and directly influencing the children. He entertained the opinion, however, that such instruction must be given in connection with the already somewhat limited teachings of the department of physiology, and that difficulties would be experienced in this connection so long as politics dominated the boards of education.

A. H. Peck then read a paper on "The Treatment of the Pulp." This subject was considered by the essayist from the standpoint of the indications for devitalization. These were summarized in the treatment of teeth to be subsequently crowned; extensive destruction as a result of caries and exposed pulps from accidental causes, and concluded with a consideration of the required therapeutic treatment and the relative value of arsenic and pressure anesthesia.

The discussion was opened by G. V. Black and continued by O. A. Chappell, J. H. Woolley, E. H. Allen, W. V-B. Ames, W. H. Taggart, J. W. Cormany and C. P. Pruyn, and was productive of much highly interesting and instructive debate, as well as some amusing incidents. Notable among the latter was the essayist's neglect in failing to make mention of the application of the rubber dam; Dr. Woolley's false but modest impression that the essayist referred to him in mentioning the "*skillful*" manipulation of gutta-percha as a retaining medium for arsenical applications; and the "revelation" afforded to Dr. Chappell in the knowledge of the probable presence of arsenic in cements.

Dr. Black agreed with the substance of the essay in general;

emphasized the importance of applying the dam and thoroughly cleaning the cavity before treatment, to prevent infection and subsequent discoloration; of the caution necessary in the use of arsenic, and the possible attending dangers, and favorably mentioned the heroic and immediate removal of the pulp when indicated.

Drs. Ames and Woolley doubted the possible death of pulps as a result of the presence of arsenic in cements. Dr. Ames asserted that any traces of arsenic present were in the form of arsenite of zinc; challenged any one to destroy a pulp with the arsenite of zinc, copper or iron, and supported his argument bv calling attention to formation of the latter by the application of dialyzed iron, and its efficacy as an antidote to arsenical poisoning.

Dr. Pruyn spoke of the use of carbolic acid in desensitizing the fibers of pulp tissue remaining in the apices of roots, and of the advantage of applying medicaments when slightly warm; and Dr. Taggart emphasized the importance of accurate deft instrumentation, and of pressure in sealing the treatment as a cause of much trouble in devitalizing pulps. This he avoids by the use of a small disk of Taggers tin, made with a rubber dam punch and dipped in chloro-percha before applying.

The writer then read a paper on "The Use of the Saddle in Stationary Bridge Work." The discussion was opened by W. H. Taggart and continued by E. H. Allen, W. V-B. Ames, M. R. Harned, Edmund Noyes, J. W. Cormany and J. E. Hancock.

The substance of the paper was that the saddle is frequently practical and indispensable, and successful from a mechanical and hygienic standpoint in proportion to the degree of accuracy secured in the adaptation. Dr. Taggart agreed with the paper in general, and approved of the usefulness of the saddle, but expressed a belief that he could secure a better adaptation by swaging and then burnishing to the tissue, than by taking the impression of the saddle in position under definite pressure as advocated, because of the inequalities in the density of the tissues.

Dr. Ames confirmed the advantages and usefulness of the saddle, and carried the indications for their application even farther than approved of in the essay. Particularly was this so in *extension* bridges, where he approved of carrying two or three teeth posterior to a bicuspid abutment.

At the evening session C. E. Bentley read a most admirable paper on "Lesions Peculiar to Primary Dentition." The discussion was opened by M. R. Harned and continued by G. B. Elliott, J. J. Reed, C. R. Currier, O. A. Chappell, A. W. Harlan, T. W. Brophy and C. P. Pruyn. The essay dealt exhaustively with the presentation and cause of such conditions and together with the discussion was of much general interest.

A paper entitled "Root Canal Fillings" was then read by M. L. Hanaford. This was illustrated with the stereopticon by fifty splendid slides made from the photographs of the dissections of teeth which had been mounted in plaster and filled by as many different members of the society.

The paper constituted a detailed description of the method employed in the filling of each tooth as it was thrown upon the screen, showing the degree of perfection and imperfection of the results obtained, and, with the discussion following, which was opened by C. P. Pruyn and continued by C. E. Bentley, A. W. McCandless, J. J. Reed and A. W. Harlan, easily proved of special merit, interest and instruction, and the *feature* of a busy and profitable day's session.

The entertainment provided by the local committee consisted of a visit to the State Penitentiary and to the Illinois Steel works, at which places every courtesy possible was extended, and both visits were a feature much enjoyed by all.

The election of officers resulted as follows: President, C. J. Sowle, Rockford; Vice-President, J. E. Hancock, Joliet; Secretary, J. J. Reed, Rockford; Treasurer, M. R. Harned, Rockford; Supervisor of Clinics, O. A. Chappell, Elgin.

The following is a list of clinics given:

1. C. J. UNDERWOOD: Crown or Bridge repairs. For immediate repair of crown and bridge work without removal from the mouth, in case of broken facing. This method consists of grinding slots in backing for reception of pins of new facing, which is then backed up with pure gold, engaging ends of pins and covering slots and lingual side of bridge or crown, after which it may be cemented in place, completing the operation.

2. F. W. STEPHAN: Matrix and pad. Any matrix may be used, but a simple one is preferred where it can be adapted. The pad is made of tin and gold foil folded from four to eight thicknesses and cut a little larger than the matrix. This is laid on the face of the matrix and the slight surplus folded over the cervical edge. In this form the matrix and pad are carried together be-

tween the teeth and wedged firmly to place. The pad is then cut along the lingual and buccal margins and the portion within the cavity is condensed against the cervical wall. The advantages of this procedure are, 1st, that the matrix is held slightly away from the cavity margin, allowing of easy access. 2d. The cervical margin is easily and simply covered, and, 3d, the pad protects the cavity margins from danger of fracture in wedging.

3. W. V.-B. Ames showed his method of treating desperately loose teeth, i. e., teeth which have entirely, or almost entirely, lost their attachment to socket wall. Many of such teeth are going about with the support of silk or wire ligatures or the so-called figure eight gold bands, which are very unsightly and often almost as objectionable as all gold teeth. In his method the pulp is devitalized, the tooth amputated somewhere between the enamel line and the present gum line, by piercing labio-lingually with a small spear drill and then cutting laterally with a fine fissure bur. The root is then shaped as for ordinary crown construction and measurement taken. A band is cut of the combined width desired for root and crown portions and fitted to the root. The root end of band is now embedded in lumps of ideal base plate to keep shape while crown portion is being fitted into the other end. A line is now drawn on the outside of the band corresponding to the end of crown portion and a saw passed on this line till it marks the inner surface at opposite side. A flat piece of gold is placed in this slot and soldered. This diaphragm is perforated to pass a number seventeen wire into the pulp canal of crown, which has been prepared that size. After treating all teeth affected in this way the parts are assembled as in ordinary bridge work. Crowns cemented to caps and the whole then cemented to root.

4. W. T. Reeves gave an interesting porcelain clinic. An inlay was made for a meso-approx. cavity in upper right central. Adaptation very perfect—color good. In fact an exhibition of his usual meritorious work.

5. E. H. Allen: Table clinic of articulating and baking porcelain crown. Excellent results were obtained in articulation and carving.

6. R. C. Brophy: Gasoline burner and furnace. An excellent combination device for all heating purposes, for laboratory use, from heating water to fusing porcelain. This consisted of an original burner, and mixer, attached to the ordinary form of plumbers'

gasoline torch, producing an intense flame which readily fuses the high bodies in from two to five minutes. With the burner is also a blowpipe attachment for heating, soldering and melting from the same tank.

7. W. H. Taggart showed a new regulating valve for nitrous oxide blowpipe, which will be indispensable in platinum-gold soldering. This device is being perfected by Mason & Company and will doubtless soon be placed upon the market. Another contrivance of merit was an instantaneous steam producer for melting out wax from any kind of case, which consisted of a small twelve foot copper coil tubing over Brunson burner.

8. J. E. Hinkins applied for retention of the four lower incisors, a splint made of Kowarska cement. This cement is composed of celluloid 160 parts and acetone 400 parts. Time required for cement to set, one and one-half hours. The evaporation of the acetone through frequent removal of the stopper gradually produces a thicker mix of quicker setting qualities. It seems an admirable method for temporary stability, and its color, a pure white, is quite unobjectionable. Dr. Hinkins has had two splints on nearly a year and Dr. Kowarska, of St. Petersburg, claims that two or three years is its duration of usefulness.

9. M. M. Kerr showed his idea of constructing an articulator along anatomical lines, that would mimic the movements of the lower jaw. To do this he had to locate the actual hinge of the jaw in a line with the grinding surface of the molars and bicuspids, and to have a side and backward movement to allow of the necessary lateral motion. Also to have an adjustable slot on either side that could be regulated at any angle to conform to the different temperaments of the patient, or the different curves of the lower jaw.

10. Dr. H. W. Davenport exhibited samples of his pyorrhoea treatment and gave the method of procedure in its use.

INTERNATIONAL DENTAL FEDERATION: FIRST GENERAL MEETING, HELD AT CAMBRIDE, ENG., 1901.

Wednesday, August 7.

The first meeting of the Federation was held in the Physiological Theater, University Museums, on the morning of Wednesday, August 7th, when the Federation was welcomed to Cambridge by the deputy vice-chancellor of the university, Sir Michael Foster, M. D., F. R. S., M. P., who said:

Mr. President and Gentlemen: The vice-chancellor of the University of Cambridge is, unhappily for us, obliged to be away from the university at this period, and in his absence he has asked me to act as his deputy and to bid a most hearty welcome to this important International Dental Federation. I understand that its international character is assured by the participation in it of seventeen different countries, and I assure you that this ancient town feels it a compliment that you have chosen it as one, if not the very first, for your visit. The vice-chancellor trusts that your visit here will be both profitable and agreeable; that it will be profitable will rest mainly with yourselves; that it shall be agreeable we have done our best to insure.

The PRESIDENT (DR. GODON): *Sir Michael Foster, Ladies and Gentlemen*: Permit me, in the name of my colleagues of the International Dental Federation, to thank the vice-chancellor and the members of the council of the University of Cambridge for the kind hospitality that has been tendered us in these ancient buildings, where generations of students and professors, many of whom have become illustrious, have succeeded one another. No place could be more appropriate for our labors than Trinity College, where the names of Newton, of Roger Bacon, of Macaulay, of Tennyson, of Dryden, and many others, present themselves spontaneously to our minds to inspire us and to encourage us in the work of universal union and of international education that we have undertaken.

And no one is better qualified to receive us than Sir Michael Foster—the learned representative of the vice-chancellor of the university; Sir Michael Foster, the eminent physiologist whose name has become universally famous through his scientific work. He welcomes us to-day with the same kindness with which, as president of the British Association, he welcomed my countrymen at Dover in 1899. In the name of the Executive Council of the International Dental Federation, and in that of the International Commission of Education, I beg to tender him the sincere expression of our gratitude and respect.

SIR MICHAEL FOSTER: *Mr. President and Gentlemen:* The ancient university to which I have just had the pleasure of bidding you welcome, and which numbers among its illustrious men, in addition to the names which your president has mentioned, that of William Harvey, presents somewhat medieval features which are lost to other universities—features medieval, but modified by modern development.

In the earliest days of the university every one who attained the title of doctor thereby gained the right to teach. He, in those early days, taught in any room he could, in one which he hired for the purpose with his own scanty earnings, or in one which was granted to him by the benevolence of others. His pupils in like manner lived where they could, sometimes in such lodgings as their poor purse could secure, sometimes enjoying the hospitality of benefactors. In the course of time the university became able to make provision for its teachers—if not for all its doctors, at least for those whom after a while it came to speak of as professors. The students, on the other hand, found it to their profit to gather together in common lodgings, which came to be called hostels.

In most countries other than England, while the provision made by the university for its teachers has enjoyed a large development and all universities have now their lecture theater, their museums, their libraries, their laboratories, and their halls for solemn occasions, the hostels have for the most part been broken up and the students left to shift for themselves. In England, on the other hand, the country having been for centuries secure on the whole from invasion and war's destructive effects, the hostels have flourished more and more. In the course of time, after in some instances a temporary connection with religious orders, they have developed into what we here call colleges—institutions which are hostels in the sense that they afford lodgings for the students, but which do much more than this, in that, over and above what is done by the university, they afford teaching of a very varied kind, and moreover have entered into special relations with the university itself. Each college, in fact, is in many respects, in Cambridge, a small university within the mother one. Here at Cambridge we have seventeen colleges, in addition to institutions which we consider as and call mere hostels, seventeen small universities having complicated relations with the university itself and carrying out much of the teaching—performing, in fact, almost all university functions save that of giving a degree.

Such a state of things could not help leading to a certain rivalry between the mother and the seventeen daughters. The prosperity of the colleges was more or less inimical to that of the university, and indeed for many years the university, as distinct from the colleges, somewhat languished. During the last generation or so, however, it has undergone great development and expansion.

You are gathered to-day in a university which, like its sister university of Oxford, bears more distinctly than do most of the other universities of Europe the stamp of early and medieval times, preserved by the predominance of the colleges. You may recognize this in the direction and respective relations of the studies carried on in the plan. In old times there were three faculties in a university—theology, law, and medicine, corresponding to the three pursuits which demanded at that time book-learning. For the university was founded for practical purposes, and only these three pursuits as yet needed book-learning; the soldier, the merchant, and the manufacturer could do without it. Later on there grew up a faculty of arts for the protection and advancement of those more general studies which furnished an introduction to the three special practical studies. He who aspired to be a doctor of theology, law, or medicine spent much time in this common learning before he specialized for his profession. In the course of time the colleges took up with vigor this common learning, leaving the more professional studies to the university itself. Moreover, partly from the circumstances of their origin, their early connection with religious orders, partly from other influences, the colleges, and with the colleges the university, became more and more associated with the church, the Established Church of England. And, indeed, during the early and even in the middle part of the past century the university and the colleges seemed to belong to the church. The university became the training-place for nearly all the clergy, and gave them all they needed, while some lawyers only, and even fewer doctors, sought its aid, and received there not a professional, but solely a general education. The last generation has, however, seen great changes. The ties with the church have been loosened, professional studies have been encouraged, and in an increasing manner not clergymen, lawyers, and doctors only, but men of other professions and pursuits—the engineer, the farmer, the man of business and commerce, the manufacturer, and even the soldier—are knocking at its doors and seeking for professional as well as general education.

At the present moment you will find this university, like other seats of learning and education, busy with the question, What is the best kind of education for each profession and pursuit?—a question which is also stirring you.

All, I venture to think, are agreed that education should be fashioned after the manner of a cone, starting from a broad basis and narrowing to an apex, for it is the conical bullet that has penetrating powers. In the storm and stress of modern life an all-round education, such as makes a man a mental sphere, is not in itself adequate. Spheres move readily one over the other, and spherical education may be good in society, but it is not suited for a profession. The round ball thrown at a surface may make a hole, but more frequently simply rebounds; whereas the cone may be depended upon to pierce, and the man whose education is conical makes his way.

For each profession the cone should be different, should be fashioned in different ways, though in each case it should start from the same broad basis—namely, the broad basis of the discipline of the school; that is, the boy's school. I say discipline rather than the learning of the school, for the aim of the schoolmaster should be in all cases the formation of the mind—the setting of the instrument, not the filling of the bottle. The growth of habits of accuracy, of intentness, and of alertness, this rather than the gathering of mere knowledge of facts is the proper heritage of the school, and for the attainment of these habits it matters not so much what the boy is taught as how he is taught.

From this broad basis of a general school education the narrowing of professional training begins, and we thus come to the question which interests us to-day; that is, the narrowing of training which is best for the dentist, and how shall it best be brought about? On this it would not be fitting that I should do more than offer a few general reflections.

The dentist is a healer; his business lies with a very small portion of the human frame, but that portion, though small, is still human; it has its diseases, its failings, and the dentist has to cure these—bringing in, whenever it be possible, that best of cures, prevention. The training of the dentist is, in broad terms, the training of a healer.

I remember that in my young days a celebrated surgeon used to say that a surgeon was a physician and something more, meaning that he had to possess a general knowledge of disease such as the physician possesses, but had, in addition, not only to know certain features of disease which the physicians might neglect, but also to acquire a manual dexterity which the physician never needed. In somewhat the same way we may say that the dentist is a surgeon and something more. He has, like the physician, to possess a general knowledge of disease, and to possess, like the surgeon, a certain skill of hand; but besides this he has to acquire a special manual dexterity never called for in a surgeon, and to possess a special knowledge of metallurgy, of chemico-physics, and of branches of mechanics of which neither the physician nor the surgeon need know anything at all.

All knowledge is useful, but the power of the human mind to attain and retain knowledge is limited. We cannot all know everything. The surgeon need not, and if he is to excel greatly in his art cannot know all the minutiæ of the physician's calling; he cannot at once be an accomplished surgeon and complete master of all the details of auscultation and the intricacies of neural pathology. In like manner the dentist, if he is to excel in his art, cannot hope to know all that the physician must know and the surgeon must know. Such being the case, where shall we begin to narrow the education of the dentist? for narrow it we must. How are we to differentiate the training of this special healer from the training of the general healer, the physician or the surgeon?

The training of the doctor is partly general, partly special. His special training ought to be as full and as complete as possible; he cannot know too much, he cannot be taught too much of actual disease and of the various means to combat it. His general training stands on a different footing. The object of this is to enable him to understand and judge the special knowledge which he has to acquire, and though from one point of view no general education can be too wide, from the point of view of the demands of actual life that general education is sufficient which secures the above object, and which adequately prepares him for the special training which follows. The main elements of the doctor's general training are these: He must know general pathology, the nature of the processes of disease. This is the central element, the fundamental element absolutely necessary for the understanding of the true nature of individual maladies, and time spent on this is time wisely and economically spent. Further, he must know physiology and anatomy, but there is no need to carry his studies in these further than is sufficient to enable him clearly and fully to lay hold of the truths of pathology and the laws of health, and to impress on his mind such details of topographic anatomy, as will always stand him in good stead in his practice as a physician or a surgeon. Lastly, he must know physics and chemistry, for without a certain knowledge of these he cannot understand physiology, and must remain really ignorant of pathology.

The dentist, like the doctor, needs a general as well as a special training. What can be said about the general education of the dentist? And when I say "dentist" I mean the scientific dentist, he who does his work not by mere rule of thumb, but in the light of scientific knowledge and under the guidance of scientific principles—for it is with him alone, I take it, that we are interested here. What ought the scientific dentist to undergo in the way of general training?

I imagine that I shall not go far wrong when I say that, in common with the doctor, he ought to possess a general knowledge of pathology. He has to deal with disease, with disease of the teeth and, indeed, of the mouth, and he ought to be well acquainted with the general truths of pathology. He need not be carried further into the details of disease than is necessary to enable him to understand general morbid processes and the common ways in which living structures go wrong. But he may with profit be led to spend some considerable time on that division of pathology which teaches how many of the ills that flesh, even the hardest part of it, is heir to are the handiwork of minutest organisms, are scourges laid on by invisible rods. What we now call bacteriology must, so far as it deals with disease, be an essential part of every dentist's training. Beyond this the dentist needs, like the doctor, such knowledge of physiology and anatomy as will enable him to lay hold securely of pathology, but in his case the details of the topographic anatomy of the body at large are not needed, and may fitly give place to a knowledge of the anatomy and physiology of the teeth, more special and more complete than is ever needed by any doctor. Such a general training is one more or less common to both the dentist and the doctor. But the former has also need of a general—that is, of a preparatory—training wholly uncalled for in the case of the latter.

The days when the public mainly judged of the merits of a dentist by the celerity and freedom from pain with which he robbed his patient of possessions which could never be really replaced are long gone by. The art of the dentist is now pre-eminently a constructive and preservative art. And the dentist, if he is to succeed in construction, must know the nature of the materials which he constructs, and the physical, mechanical laws of the construction which he attempts. If, in order to grapple adequately with disease, he must share in the general training of the doctor, he must, in order to grapple with the difficulties of repairing the ravages of disease which he and others have failed to prevent, share in another general training of a wholly different kind. He must be inducted into some, at least, of the mysteries of metallurgy; he must have a scientific knowledge of the chemical and physical properties of the varied materials which he uses for construction, and he must learn something of what may be described as a special branch of engineering. He must be trained in ways and things wholly unknown to the physician and the surgeon. Moreover, if he is to hope to succeed in his profession, he must know the things of which I am speaking not only theoretically, but practically. Just as the young doctor begins his practical hospital duties by dressing wounds and acting as a nurse, as the general who commands armies has at the beginning to take his place as a private in barrack square drill, as the young engineer puts on his blouse to go through the workshop, so the young dentist must spend an allotted time at the bench.

Obviously the training of the dentist, much as there always must be in it common with that of the doctor, must be narrowed in its own way if the cone of education is to be brought to an effective apex.

Doubtless the dental profession has much to gain in many ways by a close alliance with the medical profession. The position of being a branch of the great and powerful medical profession gives it advantages many and great, and it would be folly to cast away these advantages by demanding a divorce unless that divorce be really necessary.

One object, and one object only, ought to be the aim of the training of a dentist—to make him as sure and as efficient a workman as possible. If, as seems probable, in the rush of men and things, ordinary minds under ordinary circumstances cannot achieve that efficiency and at the same time pursue a complete medical education, then some separation seems inevitable. The separation, however, should not be a divorce, but simply a deviation or differentiation, a claim for a separate apex hand in hand with the acknowledgment of a common basis.

The Dental Review.

Devoted to the Advancement of Dental Science.

Published Monthly.

Editor: A. W. HARLAN, M. D., D. D. S.

Associate Editor: A. E. Morey, Ph. B., D. D. S.

Delayed.

On account of the excellence and the length of some recent papers (Dr. McBride's and Dr. Förberg's) we have been unable to give space to equally interesting and instructive papers. However, we expect to get nearly to the fore by our January issue. Never before were our columns so crowded with original matter.

Fifteen Years.

With this issue, the beginning of the sixteenth year is celebrated, as our first number was published November 15, 1886. Beginning with the January magazine the price of subscription to the Dental Review will be $1, to all parts of the United States, and $2 to all foreign countries. Of course now is the time to subscribe.

The Illinois Dental Board.

Elsewhere we publish the new regulations of the new board of dental examiners of Illinois. It will be seen that a new era has dawned upon the present board which is the best in its personnel for several years. The odium that has attached to the acts of the board will be wiped out if the rules and regulations are enforced. The secretary of the old board, J. H. Smyser, has been indicted by the grand jury of Cook county, and we expect that the atmosphere will be cleared during his trial. We have always been of the opinion that the board should act according to the strict letter of the law. It seems now that the members of the board are in earnest to wipe out the stigma that has been fixed upon it by the looseness of methods (not to characterize them by a harsher name) that has attached to it in former years.

We hope that all guilty work done will be disclosed in the trial of the late secretary and that this board will be recognized as willing to do its duty without fear or favor. In no foreign country has it been permitted to examine a candidate except in the language of the country. If the present board will stick to this no person coming from any foreign land will get a license until he takes the examination in English and passes the full board. We are gratified that Mr. Worman has taken it upon himself to do so much work to settle the status of the American degrees in Germany, and the Foreign Relations Committee of the National Association of Dental Faculties deserves much credit for the efficient work done in this cause. We will publish all essential matters in this case as they develop.

THE LAWS, RULES AND REGULATIONS OF THE ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

TO INSURE THE BETTER EDUCATION OF PRACTITIONERS OF DENTAL SURGERY AND TO REGULATE THE PRACTICE OF DENTISTRY IN THE STATE OF ILLINOIS.

The rules and regulations were adopted at a regular meeting of the board, held at Chicago, Illinois, October 18, 1901.

MEMBERS OF THE BOARD.

T. W. Pritchett, president, Whitehall, Ill.
J. G. Reid, D. D. S., secretary, 126 State St., Chicago, Ill.
G. H. Damron, D. D. S., Arcol, Ill.
Clark R. Rowley, D. D. S., 167 Dearborn St., Chicago, Ill.
Donald M. Gallie, D. D. S., 100 State St., Chicago, Ill.

ATTORNEY FOR THE BOARD.

Richard J. Cooney, 138 Washington St., Chicago, Ill.

RULE I.

LICENSES ON DIPLOMAS.

A holder of a regular diploma from a dental college in good standing with the Board can obtain a license as follows:

On application to the Secretary of the Board of Dental Examiners, a blank form for verifying the diploma will be furnished. The applicant will properly fill out the same and make oath as to its correctness before a notary public or other officer authorized to administer oaths. The applicant will be required to have attached the signatures of two reputable persons who have seen the diploma and know the applicant, for which a proper place in the blank is prepared (registered dentists or physicians preferred). When so filled out and sworn to, the blank should be returned to the Secretary with the fee of $5 and postage, when, if in form, the license will be issued.

Rule II.

Any person may come before the Board at any of its regular meetings for examination in the several branches of dentistry, and if found proficient, the Board will issue to the said candidate a license to practice. An average of at least 80 per cent in all branches will be required. If any applicant falls below 50 per cent in any one branch, he shall fail to pass, but may take the examination again at any regular meeting; and shall be reëxamined in full upon all branches that other applicants are examined in at the examination. Every candidate should notify the Secretary of the Board of his intention to be examined one week before the examination takes place.

Rule III.

No license will be issued to any candidate except after examination by the Board at a regular meeting.

Rule IV.

SCHEDULE OF MINIMUM REQUIREMENTS.

Sub-Rule I. Conditions of matriculation.

1. Certificates of good moral character.
2. Evidence of a good English education, to be shown by a diploma of a recognized literary or scientific institution, high or normal school, or first grade teacher's certificate, or, in the absence of these, an examination in the branches of a good English education under the supervision of the Superintendent of Public Instruction.

Sub-Rule II. Full courses of didactic lectures and instruction must be given of not less than three terms of seven months each, covering a period of three years and a succeeding term shall not begin until twelve months have intervened between the beginning of the last preceding term and the beginning of a succeeding term. After and beginning in the year of 1903, four terms of not less than seven months each and covering a period of four years and a succeeding term shall not begin until twelve months have intervened between the beginning of the last preceding term and the beginning of the succeeding term, embracing the following subjects, viz.: Anatomy, histology, oral surgery, physiology, pathology and hygiene, materia medica, chemistry, therapeutics, operative or clinical dentistry, prosthetic dentistry and orthodontia, bacteriology, operative technics, prosthetic technics and metallurgy.

There must also be proper clinical instruction in the operating rooms and practical work in the chemical and prosthetic laboratories and dissecting rooms.

Sub-Rule III. Attendance on examination, quizzes and clinics.

Attendance upon the entire courses as named above will be required, deductions of not exceeding 20 per cent to be allowed for sickness and unavoidable absence. Quizzes must be held at least once in each week in each branch.

Sub-Rule IV. Conditions of graduation; time of professional studies.

Candidates for graduation must have attended three regular courses of lectures as above stated, and must pass satisfactory examinations in the above named branches. They must also furnish creditable evidence of having spent not less than three calendar years in the study of dental surgery, or medicine and surgery and dental surgery (in which last case not less than two full calender years, must have been spent in the study of dental surgery proper), and all of the studies must have been under the direction of competent preceptors. This rule applies to those only who matriculate previous to the fall of 1903.

Sub-Rule V. Facilities and equipment.

The college must have suitable and proper facilities and equipment as regards lectures, chemical, histological and bacteriological laboratory, dissecting room, operating rooms, and prosthetic laboratory. All of the practical instruction to be under the constant direction of qualified superintendents or demonstrators.

Sub-Rule VI. Advanced standing; requirements and conditions.

Applicants for advanced standing must be required to furnish a certificate from the dean or other officer of some college recognized as in good standing by the Board, showing that such student has matriculated and attended the lectures and clinics of one or more courses, as required above, and if such certificate does not show that the student has passed all the branches embraced in the course or courses attended, he must be submitted to and must pass an examination in the same before being admitted to the advanced standing. Every student must have attended at least one year of the course in the college graduating him. But this shall not be so construed as to prevent an examination in all such branches before admission at the option of the faculty.

Sub-Rule VII. Application for recognition.

The Secretary is not authorized to issue the license of the Board upon diplomas of colleges not previously recognized.

Any such colleges, in order to obtain recognition, must through their officers make application to the Board, accompanying it with authenticated copies of the announcements, schedules of lectures, quiz and examination questions, or so much of them as the Board may require, to form an intelligent judgment; and there should also be furnished a statement of the equipment and facilities of the institution, and its legal status in other states, particularly its home state, if not located in Illinois.

Sub-Rule VIII. Rights reserved.

Although a college may have been recognized by the Board as reputable, yet the Board reserves the right to withdraw such recognition at any time when it may deem it for the best interests of the public to do so. The failure of any college to live up to its profession and published announcements may involve such a withdrawal of recognition. The President and Secretary of the Board are instructed to suspend such recognition, pending an investigation, when any charges or facts shall come under their cognizance, effecting the standing of such college.

Sub-Rule IX. Additional requirements.

In addition to the minimum requirements of the Board, colleges will be held to a strict compliance with all their own published requirements, and to the observance of all rules which they profess to observe and any material deviation therefrom coming to the knowledge of the Board will be held sufficient grounds for suspension of recognition, as above stated.

RULE V.

That any person removing into this State, who shall have been for a period of ten years prior to such removal, a legal and lawful practicing dentist in the State from whence he came, shall be entitled to a license to practice dentistry in this State when satisfactory proof of that fact is made to appear to the Board.

RULE VI.

There shall be two regular meetings of the Board held each year, the time and place to be determined by the members of the Board. Special meetings may be called at any time by three or more members of the Board for the transaction of such business as may come before it, with the exception of the examination of applicants for licenses.

RULE VII.

Due notice of all meetings shall be given by publication in at least one dental journal published in this State, and by the Secretary of said Board, mailing a notice to each person, who may notify him of his or her desire to attend any meeting of said Board.

RULE VIII.

Examinations shall be practical, oral, or in writing, or partly oral, or partly written, as the Board may determine, and shall be held in the English language.

RULE IX.

Said Board may employ an attorney to be paid out of the funds of the Board. Said attorney shall prosecute and defend all cases, for and against the Board, and to attend to all its legal business.

RULE X.

Said Board may employ an agent, whose duty it shall be to report to the Board or its attorney, the names of all persons whom he believes to be practicing dentistry unlawfully. His compensation shall be fixed by the Board.

RULE XI.

Said Board shall not contract any debts beyond the amount of money they have on hand to pay.

RULE XII.

Any dentist desiring to practice dentistry in any county must record his license with the county clerk of said county before he begins to practice.

RULE XIII.

No person, firm, company or dental parlors shall commence to practice or solicit dental work unless the names of all persons composing such person, firm, company or dental parlors appear on their signs, cards, or advertisements, and all of said persons must be registered dentists.

RULE XIV.

No person except a registered dentist shall hold himself, or herself out to the public as a dentist for the purpose of securing patients, although the work may be performed by registered dentists. The law makes no provision for the assistant dentists, and an unregistered dentist with a separate chair cannot work under a registered dentist.

RULE XV.

Any person who holds himself or herself out to the public as a dentist in any manner by card, sign, advertisement, or office, shall be deemed to have commenced the practice of dentistry

RULE XVI.

All rules in conflict with the foregoing are hereby repealed.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

TO THE EDITOR OF THE DENTAL REVIEW:

Dear Sir:—The first of the dental societies in our Greater New York, to "open the ball" this year for the fall campaign, was the "Institute of Stomatology," which met Tuesday evening October 1, at the office of Dr. S. H. McNaughton, 63 West 49th St., the president, Dr. J. Morgan Howe, occupying the chair.

In incidents of office practice, etc., Dr. F. Milton Smith showed some tiny disks for cutting grooves in porcelain inlays, and a crown which he had made intended to preserve the pulp in the tooth (a superior lateral incisor) and simulate the appearance of extensive gold fillings on both buccal and approximal surfaces, because of similar fillings in the natural teeth. The appearance of a large porcelain face when so much in the way of gold filling appears on other teeth would not be pleasant. The case shown was very clever.

Dr. Geo. S. Allan showed models of a delicate piece of plate gold bridging work, removable if desired, to fill a *small* space between two molars, in which food was continually packed during mastication. This little device was very delicate and could readily be cleaned.

Dr. Samuel A. Hopkins, of Boston, was then introduced, as the essayist of the evening. His paper was entitled, "Science as a Teacher of Prophylaxis."

It was exceedingly interesting, and when it appears in full, will well repay a thoughtful and careful perusal.

He spoke of dentists, as being singularly different from other professions in that they are, as a rule, continually seeking to *prevent* decay, to *prevent* that which seems to be their especial work to repair, and in summing up he spoke especially of having our "ideals so high that we must always keep on climbing."

Unfortunately the discussion took a much wider range than it ought, and not being confined to the question of the paper, strictly, soon became a discussion of "fads" of this one's or that one's particular method of doing things.

It is to be deplored that those who do not hear a paper—coming in late—should assume to know so much, that they dare go on and appear to discuss the paper of the evening, when in reality they are far from the subject.

This was the case this evening and many were made to feel uncomfortable, and much which might have been said on the subject as presented by Dr. Hopkins, was lost.

The discussion was participated in by Dr. D. D. Smith, of Philadelphia, Dr. S. E. Davenport, of New York, Dr. Babcock, of Brooklyn, Dr. E. A. Bogue, of New York and others.

The second meeting of the fall season was that of the First District Dental Society, held at the Academy of Medicine on Tuesday evening the 8th inst.

The meeting was well attended. Considerable interest seemed to be in Dr. Geo. Evan's paper, " Porcelain Inlay Work," assisted by illustrations and specimens. The subject was handled nicely, but was not so replete with new methods of procedure as we were given to expect. In fact, it is quite certain Dr. Evans had told all his little secrets long ago.

The Second District Dental Society met at the office of Dr. Halsey, in Brooklyn, on October 6, and listened to "A Layman's View of the Dental Profession," by Mr. Hamlet, a Congregationalist preacher. His discourse was broad in character and liberal in sentiment, quite different from what was expected from a layman and what we are accustomed to hear. Mr. Hamlet surprised all by his knowledge of the dentist; not of his technique, but of him as a professional man. His hope was that our profession will not deteriorate as the church, law and politics have. Most professions are schemes to make money. "Progress must be our motto. This is not the stopping place." Several times Mr. Hamlet quoted the ancient scholars. He referred to Phideas, the Greek, whose main ambition was what he could do for humanity. After analyzing the digestive function wonderfully well for a layman, Mr. Hamlet concluded by saying that upon dentition depends the whole of man. "The modest foundation stones of the pyramids have given the life of thirty centuries to these wonderful structures."

Mr. Hamlet showed some breadth of understanding of the fundamentals of dentistry when he remarked that we were rather not a learned society, but a science. First is simply bookish. "A true professor of the healing art is always doing in order that some good might come." That, in reality, is the religion of to-day.

The paper was certainly an able one. Its construction on liberal and conversant lines so surprised the assemblage that the responses to the same were rather scattered. Drs. Hillyer, of Brooklyn, and Meeker, of Newark, N. J., said that they supposed we were going to be told of our faults, but to be told by a layman that we were angels was beyond understanding. Mr. Hamlet, in his response to this, issued a rebuke. Those who discussed the paper seemed to be of the opinion that he spoke of them as they are, but in reality he wished to tell us what we might be. This occasioned much merriment.

Dr. LeRoy, in speaking to a point in the paper referring to discrimination of knowledge, said that he felt that the charlatan dentist was doing more to educate the public than any other medium that could be adopted. What the public requires is object lessons.

Mr. Hamlet subsequently was identified as the brother of one of Brooklyn's prominent dentists.

The following day, Tuesday, the Odontological Society of New York City convened at the Academy of Medicine to listen to Dr. Good, of Chicago read his paper on "Pyorrhoea." Dr. Good was introduced as the essayist of the evening. In about three minutes he summed up the pyorrhoea question and its treatment; had courtesied his listeners and sat down.

We were all taken unawares. Your correspondent thought his remarks were a prelude to something more elaborate to follow. In reality it was a pretty symposium of the question. Enough was said. Practically all had been said; some of the points gleaned are that he injects fifteen per cent solutions of cocaine where the operation is painful to instrumentation. He circulated for inspection his set of scalers which looked very much like delicate spoon excavators of varying angles and bends of shafts. After the operation he syringes with *warm* lactic acid; sulpho-naphthol is used as sterilizing agent. Massage is resorted to and recommended, and finally applies to the gum powdered sulphur, placed there by the finger. He does not believe in destroying pulps promiscuously, but does so in teeth that are very sensitive. It was elicited that his practice is practically the same as Dr. Younger's under whom he studied.

Dr. Rhein, of New York, spoke to some length in discussion of Dr. Good's paper. He deprecated the tendency to make the treatment of pyorrhoea special work, also that dentists should apparently shirk this character of work from fear that they will not be remunerated.

The all glass syringe he thought far better than the metal one shown by the essayist from a hygienic standpoint.

Dr. Geo. A. Mills said he had been in dental practice fifty years. In 1874 he "started out to make a specialty of pyorrhoea but found—he—" had to back down.

He gave all credit to Dr. Riggs for fathering the diagnosis and treatment of pyorrhoea.

Dr. Jarvie took exception to this, stating that he had found in his researches a pamphlet printed about 1835, which referred specially to the cleaning of teeth, removing of tartar, etc., etc. He said that Dr. Riggs should not be given credit as originator but as one who gave impetus.

Dr. Good, in concluding, said that he believed that the treatment of pyorrhoea should be special work.

Work before remedies is that which tells the story.

Yours truly,

"The Boroughs."

REVIEWS AND ABSTRACTS.

Oral Pathology and Practice. By W. C. Barrett, M. D., D. D. S., M. D. S., LL. D., Buffalo. Published by the S. S. White Dental Manufacturing Co. Price, cloth, $3.

This manual has been revised, containing 319 pages and 104 illustrations. As bacteriology has become an important etiological factor in all disease processes, one would naturally think the author would have treated the subject in this book with more clearness. For instance, the author in speaking of the metabolic action of microörganisms on nitrogenous substance, says sulphureted hydrogen is a by-product. This statement should be qualified. First, is sulphureted hydrogen a product or a by-product of bacterial action? It is a well-known fact that only a limited number of bacteria produce sulphureted hydrogen from nitrogenous substance, free from peptones. In the use of the expression by-product, as used by the author, would lead the student to believe that all chemical activities of bacteria resulted in by-product. This is an important point in pathology, for under strictly anærobiotic conditions the secondary oxidation is practically impossible.

On page 16, the author says that conclusive experiments show that rabbits are immune to tubercular infection under ordinary conditions. These animals are used extensively in experimental work, and when tubercular bacilli cannot be found in suspected sputum, inoculation in rabbits is a conclusive test.

On the same page the author makes the statement that tuberculosis is as communicable as smallpox. It is very doubtful if the author would not prefer taking chances sitting alongside a tubercular patient to that of a smallpox case. Whether tuberculosis in man is contagious with some is an open question, but smallpox may be considered as always contagious. The author uses the term contagion to express the same conception as that implied in the term infection. The author says that the process of fermentation is of overwhelming importance, and yet has only devoted three or four pages to its discussion. He says the unorganized ferments are the enzymes or those of digestion. The custom of calling microörganisms living ferments is passing into disuse. These unorganized ferments are found in germ free filtrates, albumen dissolving enzymes (proteolytic) and are widely distributed in gelatin liquefaction.

On page 92 the author, in speaking of the active factor in dental caries, says food may lodge in the pits and irregularities or between the teeth and by the action of some ferment this is perhaps changed into some fermentable sugar. This forms a suitable medium and it is perhaps infected with certain acid producing fungi. What would dear old Pasteur think to see or hear the subject of fermentation taught to students in this way?

The author in speaking of classification of the fungi says they are as much of a vegetable as the potato or a geranium. In a sense that might be true, still many of these microörganisms must have organic food.

In speaking of necrosis, the statement is made that necrosis of the hard tissue is the analogue of gangrene in the soft tissue necrosis as the devitalization of a territory has an osteogenetic origin. I am at a loss to know how the author can make such a statement in the face of all the best authorities. There is a coagulation necrosis which takes place on the mucous membrane by the bacillus diphtheriæ. The serous and mucous membranes are most susceptible. A caseation necrosis is frequently found in tuberculosis of the soft tissue and in many of the granulomata processes, fatty necrosis is found only in fatty tissue.

Gangrene in the primary stage is the action of a particular bacterium like in the case of malignant edema, or, in the secondary stage when saprophyte bacteria decompose an already necrosed area from some other cause. No reference was made as to the difference between the higher or low forms of microörganism. The coccus forms are considered much simpler than are the ray fungi of which, by the way, no mention was made in the book, of this disease producing fungus, not infrequently found as a disease process in the oral cavity.

The author's interpretation of pathology and bacteriology is so out of harmony in general with the subject as treated by other writers, that it seems impossible for this manual to find a place as a text-book for the teaching of pathology and bacteriology.

However, it must not be forgotten that a work of this kind could not contain all of these subjects. But we do feel that the literature of the past few years has not been well studied, and in many of the text-books of dentistry it looks as if the authors were satisfied with the vaguest conception of things pertaining to cause, but as Homer has said, "So how men blame the gods, from us they say spring troubles; but through their own perversity and more than is their due, they meet with sorrow." G. W. C.

MANUAL OF CHEMISTRY. By W. SIMON, Ph. D., M. D. Seventh edition; thoroughly revised, with sixty-six illustrations, one colored spectroplate, and eight colored plates, representing sixty-four chemical reactions. Lea Brothers & Co., Philadelphia, New York, 1901. Cloth, $3, net.

This is a book of 613 pages. While chemical physics is considered to be a dry subject, the author of this work deserves great credit for having presented the subject matter in such a simple, instructive and entertaining manner.

The chapter on electrolysis and the ionic theory is the best we have ever read in any manual on chemistry, and it deserves the careful perusal of every practitioner.

The author's equations and illustrations are presented in such an admirable way, that students can easily grasp the chemical points.

The analytical colored charts or plates are very artistic and serve to impress upon the minds of students the analytical reactions. Organic chemistry has been considered one of the hardest and most difficult subjects for students to comprehend, but in this book it has been very much simplified. The chapter on hydrocarbons is well written.

In one of the chapters, alkaloids, antitoxins and proteins are treated in a masterly manner, the author showing great familiarity with these agents and their uses. They are discussed in a clear and concise way.

The style of the author is clear and pointed. The illustrations are excellent. There is a copious index. As a whole, the work is a good example of book making. J. E. H.

ORAL SURGERY. A Text-Book of General Medicine and Surgery, as Applied to Dentistry. By STEWART LE ROY MCCURDY, A. M., M. D. Published by Calumet Publishing Co., Pittsburg, Pa. Price, cloth, $3.

The author should be congratulated upon that paragraph of the preface in which he says: "General pathology can in no way differ from pathological changes in the mouth. Up to a certain point the dental student is educated in all branches of general medicine, and his course should be as thorough in chemistry, anatomy, physiology and materia medica as that of the student of general medicine. From this point on, instead of pursuing theory and practice of medicine, general surgery, obstetrics, gynecology, etc., a departure is made into special dental subjects. Some knowledge of all of these subjects, however, is necessary in order that the dentist may have a fair conception of all forms of disease, and be thereby better prepared to differentiate local pathological changes in his field of operation."

In Part I., surgical fevers, erysipelas, shock, general diagnosis, asepsis and anesthetics are considered. A close reading of these chapters shows a wide range of definite knowledge on the author's part. Yet it appeals to the writer that if the chapters upon general diagnosis and anesthetics were more comprehensive a value would be added to Part I. which would make it even more meritorious. In Part II., diseases of the antrum and other cavities, diseases, injuries and neurosis of the face, congenital defects of the face and mouth, disease of bone, tumors, neuralgia, fractures and dislocations, are the important subjects among the many pathological conditions discussed.

If one was inclined to criticise, the following statements might be considered on page 121, under prognosis in treatment of antral disease due to infections of the mucous membrane. "It cannot be promised, however, that when suppuration has existed for months, or years, that the sinus formed to establish free drainage or an existing sinus can be closed." It has been many operators' experience that the sinus established for drainage could not be kept open long enough to combat the antral disease.

A difference of opinion might also be expressed about the statement, that, "a carbuncle is one or more feruncles."

While considering deformities of the face and mouths; Dr.

McCurdy should be highly complimented upon the cut which represents the author's self-retaining mouth gag and tongue depressor, for if it works as perfectly as it would appear from the picture, it is by far the most ingenious appliance made for this purpose.

Fractures are fully discussed in a chapter of twenty-four pages and here as throughout the whole book many excellent cuts are interspersed to bring out certain important phases of the subject.

In conclusion let it be stated that the work as a whole is a worthy effort in the right direction. For the reason that better books have been needed on this subject. This little volume of 364 pages should be purchased for its merits, as there is much of value between its neat covers. W. H. G. L.

GORGAS DENTAL MEDICINE. Seventh Edition. Revised and enlarged by DR. F. J. S. GORGAS. Published by P. Blakiston's Son & Co., Philadelphia, Pa. Cloth, price $4.

The first edition of the work was published in 1884, since which time it has undergone six revisions. The seventh revision has been largely rewritten and much valuable material has been added. It is a volume of over 600 pages well printed and bound and comes to us as an old friend which we are more than delighted to see. The phenomenal advancement made in medicine and therapeutics as applied to the practice of dentistry during recent years has made it necessary to greatly enlarge this volume over previous editions. The first part of the book which has to do with definitions, abbreviations and table doses remains practically the same with slight additions. Much has been added to the articles on electric therapeutics, inflammation and diagnosis of mouth affections. The article on inflammation I wish to commend highly. Indeed it is a concise presentation of this important subject and can only be improved by adding something more in detail as to its pathology. I wish, however, that his article on the pulse could have been more complete. The value of the careful study of the pulse cannot be overestimated. One of the greatest needs of the profession to-day is a more thorough knowledge of the pulse as a diagnostic aid.

The writer does not think the *arrangement* of medicinal agents in the book *alphabetically* is the best. It seems to me that if these agents were grouped in classes according to their effects or even according to their most prominent therapeutic uses they would be much more easily studied, and as this book is intended primarily for the student this criticism seems just. We are glad to see special attention given to some of the newer remedies which are proving so valuable to practitioners and less space to such agents as the essential oils whose value has been so greatly overestimated.

The article on cocaine and tropococaine is specially interesting and instructive.

I wish the therapeutics of the book could have had more of a systematic arrangement and could have been presented more in detail. As it is now, if the student wishes to learn what the book has to teach regarding pyorrhea alveolaris, it is necessary for him to consult twenty-five pages scattered throughout the book. The same is true of facial neuralgia, odontalgia, pericementitis, pulpitis, putrescent pulps, ulcerous stomatitis, bleaching discolored teeth, etc., etc., and even after doing this he will get but a very poor understanding of how and what to do in each case.

The article on antiseptics is to be specially commended; it shows that the author has taken great pains to become familiar with most recent investigations among this line.

This book, while being an excellent reference manual, I do not feel that it is complete enough, generally speaking, to fulfill the requirements of students as a text-book in our colleges. I feel that students need to be more thoroughly grounded in the underlying principles of medicine and therapeutics. Indeed, all that is of value in these subjects could not well be put in one volume without making it cumbersome and unwieldy. For the busy practitioner, however, and as a reference book in conjunction with more general works for students, this volume fills the need admirably and should be in every dental library, not merely to adorn the shelf but to be consulted very frequently. E. M.

BOOKS RECEIVED.

A Text-book of Pharmacology, including therapeutics, materia medica, prescription writing, etc. By Torald Sollman, M. D., Cleveland, Ohio. Illustrated. Published by W. B. Saunders & Co., Philadelphia. 1901. Price, cloth, $3.75. Pages 894.

The American Illustrated Medical Dictionary. A new and complete dictionary of the terms used in medicine, surgery, dentistry, pharmacy, chemistry, and the kindred branches, with their pronunciation, derivation and definition, including much collateral information of an encyclopedic character. By W. A. N. Dorland, A. M., M. D. Second revised edition. Published by W. B. Saunders & Co., Philadelphia. Price, limp cloth, $4; flexible cloth, $4.50. Pages 800.

[From a hurried examination this seems to be very complete and revised to date.]

MEMORANDA.

Dr. J. J. Reed, of Rockford, visited Chicago in October.

Dr. C. H. Oakman, of Detroit, paid Chicago a visit in October.

Dr. C. A. Kitchen, of Los Angeles, visited Chicago in October.

Dr. B. F. Eshelman, of Seattle, was in Chicago during October.

Dr. T. W. Pritchett, of Whitehall, visited Chicago in October.

Dr. J. G. Hollingsworth, of Kansas City, visited Chicago in October.

Dr. H. W. Shriver, of Omaha, spent a few days in Chicago in October.

Dr. L. T. Sheffield the head of the International Tooth Crown Co. is dead.

Dr. M. L. Hanaford, president of the Illinois State Dental Society, was in Chicago in October.

How many are the evil results of substitution? One of our contemporaries complains of substitution. What remedy will cure it?

Dr. John S. Marshall will soon issue a book on operative dentistry. It will be published by J. B. Lippincott Co., Philadelphia.

Why not set all crowns with gutta-percha? If it is good for bridges it must be better for crowns. The red base plate seems to act best.

A Chicago man has begun suit for $10,000 for the loss of three teeth, due to a fall from a building sidewalk where the edges were too abrupt.

The drawings on pages 1041-2-3 and part of 44 do not seem to be a part of Dr. Förberg's paper, but as the author is in Sweden and we are in Chicago we cannot tell all about them so we let them go and the author can explain later.—[Ed.]

The thirty-sixth annual meeting of the Ohio State Dental Society will be held at the Great Southern Hotel, Columbus, Ohio, December 3, 4 and 5, 1901.

S. D. RUGGLES, *Secretary.*

We are in receipt of a daily paper from Manilla, P. I., and in that far-off country are dentists who formerly resided in the United States of America, Dr. L. Ottofy and Dr. F. R. Harkinson.

Protargol is an excellent remedy in all cases of suppuration. From ten to fifteen per cent solution seems to act best. It does not stain like silver nitrate and it is not so caustic. We use it also on sensitive dentine.

The thirty-sixth annual meeting of the Ohio State Dental Society will convene on Tuesday, December 3, 1901, at the Great Southern Hotel, Columbus, Ohio. Sessions December 3, 4, 5, 1901. A cordial invitation to be present is extended to the profession.

Proceedings of the National Association of Dental Faculties, eighteenth annual meeting, held at Milwaukee, August 2, 3 and 5, 1901, pages 140. [This is the way to get out association work before it is so dead that new things bury it. Many thanks, Dr. Kennerly.]

A novel thought was presented by Dr. Hugo Franz at a recent dental meeting. If a pulpless tooth has an inlay and the tooth becomes dark, bleach it leaving the inlay in place. This in answer to the criticism of a speaker who thought inlay not suitable for pulpless teeth.

The full paper of M. Kowarska, of Moscow, is published in the proceedings of the XIIIth International Medical Congress, Paris, 1900, in the Section on Stomatology, on page 294. He is the inventor or discoverer of Kowarska's paste for holding loose teeth. His formula is 35 to 45 parts of celluloid to 100 parts of acetone. [Ours is 155 celluloid to 500 parts of acetone.] Try it.

The fourth annual meeting of the Southern California Dental Association was held in Los Angeles October 8 and 9. It was the most interesting and largely attended meeting ever held in southern California, twenty new members joining the association. The reports of the officers showed the society to be in a very prosperous condition.

The following officers were elected for the ensuing year:

E. G. Howard, Los Angeles, president; M. E. Tabor, Riverside, first vice-president; M. Evangeline Jordon, Los Angeles, second vice-president; J. M. White, Los Angeles, treasurer; L. E. Ford, Los Angeles, secretary.

The most important feature brought before the society at this meeting was the subject of the care of children's teeth. This society has undertaken to distribute to each child in the public schools throughout southern California, between the ages of six and fifteen years, a pamphlet, which shall be taken home to the parents. In this pamphlet is incorporated such matter as all parents should be familiar with in the care of children's teeth, the hope being that by the education of the parents in this respect the children will be benefited. Part of the matter used was taken from a pamphlet entitled "Teeth," issued by the California State Dental Society. L. E. FORD,

Secretary.

INTERNATIONAL MEDICAL CONGRESS, MADRID.

Odontology will have a section in the medical congress *instead* of stomatology. It will be section XII. There will be sixteen sections. Dr. Julian Calleja is president and Angel Fernandez-Caro, secretary-general.

MINNESOTA STATE DENTAL ASSOCIATION.

At the annual meeting of the Minnesota State Dental Association the following officers were elected for the ensuing year: President, Alfred Owre, Minneapolis; vice-president, R. H. Pierce, Duluth; secretary, Geo. S. Todd, Lake City; treasurer, H. M. Reid, Minneapolis. The next annual meeting will be held in St. Paul.

NORTHERN ILLINOIS DENTAL SOCIETY.

The Northern Illinois Dental Society elected the following named officers for the ensuing year: Dr. Chas. J. Sowle, Rockford, president; Dr. J. E. Hancock, Joliet, vice-president; Dr. J. J. Reed, Rockford, secretary; Dr. M. R. Harned, Rockford, treasurer; Dr. C. J. Underwood, Elgin, member executive committee. Rockford was chosen as the next place of meeting.

J. J. Reed, *Secretary.*

COLORADO STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of the State of Colorado will meet in Denver, Colo., Tuesday, December 3, 1901, at 9 A. M., for examination of applicants for license to practice dentistry in Colorado.

In addition to written and oral examination, applicants must supply their own patients, instruments and materials, and come prepared to do practical work under the supervision of the board, which will pass upon suitable selection of cavities.

All applications must be completed prior to December 3.

For application blanks and information address

H. F. Hoffman, *Secretary,*
No. 611 California Bldg.,
Denver, Colo.

RECENT PATENTS OF INTEREST TO DENTISTS.

682,317. Dental engine, Monroe N. Callender, San Francisco, Cal.

682,308. Rubber dam holder, Luther A. Young, St. Louis, Mo.

35,080. Design, dental engine handpiece attachment, Millard W. Grigg, Fort Mill, S. C.

682,836. Toothbrush, Lucien H. Arnold, Chicago, Ill.

682,597. Dental forceps, George L. Bennett, Chicago, Ill.

682,668. Dental articulator, Wm. M. Bruce, Toronto, Canada.

11,931. Reissue, dental chair, Frank Ritter, Rochester, N. Y.

682,756. Artificial denture, John C. Schroeder and G. P. Spangler, York, Pa.

682,892. Toothpick, Emma J. Thurston, Deming, Wash.

683,198. Means for fastening artificial teeth, John G. Burchell, Atlantic City, N. J.

683,075. Appliance for cleaning the teeth, Adam Schneider, Berlin, Germany.

683,640. Dental Articulator, Harold D. Cross, Nashua, N. H., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

683,696. Dental drill, Louis Maillard, Galt, Canada.

683,500. Tooth powder distributor, John S. Sanger, Orange, N. J.

684,256. Receptacle for saliva, Carl Hulsmann, Freiburg, Germany.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

READ THIS CAREFULLY.

The Dentists' Act. Regulations of the Board. The Certificates to be Recognized.—A number of Regulations have been made by the Dental Board of New South Wales under the Dentists' Act. It is provided that on December 18, 1903, and on December 18 in every third year thereafter, there shall be an election of six persons, four of whom shall be dentists registered under the Act, and two medical practitioners, registered under the Medical Practitioners' Act, 1898, and the persons so elected shall serve as members of the Dental Board for the periods prescribed by the Act. A number of details are given with regard to the process of election, the appointment of president, and so forth.

Following are the certificates, diplomas, membership degrees, licenses, letters, testimonials, titles, statutes, or documents which will be recognized by the board, under Section 12 of the Dentists' Act, viz.: Licentiate in dental surgery of the Royal College of Surgeons of England, licentiate in dental surgery of the Royal College of Surgeons of Edinburgh, licentiate in dental surgery of the Faculty of Physicians and Surgeons of Glasgow, licentiate in dental surgery of the Royal College of Surgeons of Ireland, licentiate in dental surgery of a university in Australia, or other British possession, degree of doctor of dental surgery or doctor of dental medicine, conferred by a school, which is either a member of the National Association of Dental Faculties of the United States of America, or whose diploma is recognized by the State Dental Board of the State, under whose charter it works, the license or diploma of any other legally qualified dental school or dental board, whose certificate is granted after not less than three years' study or five years' practice of dentistry, and satisfactory examination in the following subjects, viz., anatomy, physiology, histology, bacteriology, pathology, therapeutics, chemistry, and metallurgy, materia medica, operative dentistry, prosthetic dentistry, hygiene and orthodontia.

It is further provided that the dental board shall from time to time hold, or cause to be held, examinations in theory and practice of persons being registered as dentists and shall grant certificates to persons passing any such examination. The board shall admit to such examinations any person desiring to be examined who has previously paid a fee of £5 5s, and satisfied the board that he is a person entitled to submit himself for examination, provided that a subsequent examination may be allowed on payment of a further fee of £3 3s, and on such conditions as the board may determine.—*Daily paper, Sydney, New South Wales.*

IN MEMORIAM.

Charles S. Inglis, D. D. S.

It is with much regret and sorrow that your executive committee, in making its report to you at this, the first of our fall meetings, should find it necessary to record the death of one of the members of this society, in the person of the late Dr. Charles S. Inglis, of Paterson.

In consequence of this sad bereavement we would offer the following resolutions:

Whereas, It has pleased Almighty God, in His wise providence, to remove from our midst our beloved associate and fellow member of this the Central Dental Association of Northern New Jersey; be it

Resolved, That we, the members of this society, do hereby publicly express our sympathy to the bereaved widow and loving helpmate of the deceased; and be it also

Resolved, That we lament our loss, since by the death of Dr. Inglis we have personally lost a very dear friend and associate, and the society one of its most promising and useful members; the State one of her favorite sons, a professional man of rare attainments, dignified, discreet, brilliant and attractive, and therefore be it further

Resolved, That the above preamble and resolutions be embodied in the minutes of this society, that a copy be transmitted to the widow, Mrs. Inglis, and also that a copy of the same be printed in the Paterson newspapers.

Signed:
Frank L. Hindle, Chairman,
P. G. Voegtlen,
J. S. Vinson,
F. Edsall Riley,
Wm. E. Truex.
Executive Committee.

Zachary T. Sailer, D. D. S.

Died June 16, 1901.

Whereas, We have learned of the death of our esteemed fellow member and treasurer, Dr. Zachary T. Sailer, who was for many years one of the most earnest and active members of the Alumni Association of the New York College of Dentistry; and,

Whereas, We feel that in the demise of Dr. Sailer our association has sustained a serious loss and a place made vacant that it will be hard to fill; that we have been deprived of an able adviser and staunch friend, a man of sterling integrity and professional worth; therefore, be it

Resolved, That we do hereby express profound sorrow and regret at the seemingly untimely removal of our respected brother. We will miss his kindly presence, his able advice and loyal service, and his memory will ever be held in tender regard.

Resolved, That we extend to the widow and daughter of Dr. Sailer our sympathy in their bereavement, and that these resolutions be spread in full upon the minute book, and a copy suitably engrossed presented to the family.

John I. Hart, *President.*
J. Ostram Taylor, *Secretary.*

Benj. F. Luckey,
Chas. A. Du Bois,
Benjamin C. Nash, *Chairman*,
Committee.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE FILLING OF THE ROOT CANALS OF TEETH.*

BY M. L. HANAFORD, ROCKFORD, ILL.

This subject has been assigned to me by your committee in the hope that by our discussion of it, we may add our mite to the fund of general information which will eventually make it possible to answer the question, "What is the best material for filling roots of teeth; and what is the best manner of performing the operation?" For, notwithstanding the introduction of so-called embalming processes and the reports of marvelous success emanating from a few optimistic members of the profession, I venture the opinion that the safer practice will continue to be as in the past, the removal of diseased or hopelessly exposed pulps and the filling of the canals.

The problem is a purely mechanical one. In plain language, how shall we stop the hole? A hole of which we do not know the length, breadth or shape, with vital tissue just beyond, capable of easy infection and which we can approach only from one direction and often cannot see except by reflection.

The material must be capable of being carried into the finest hair-like ramifications of the canal, must be aseptic and nonirritating and sufficiently dense to exclude moisture.

In view of the enormous difficulties connected with all but the simplest cases, it is no wonder that the search for "short cuts" has been vigorously prosecuted.

Does it seem probable that the profession will finally agree in the main upon some material and method? I think it altogether probable. I need only to remind you of a few steps in the process of this evolution already passed.

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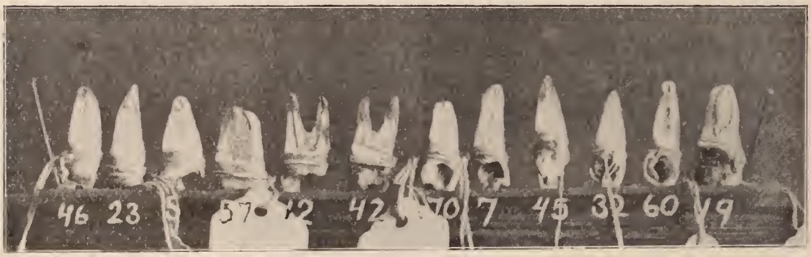
*Read before the Northern Illinois Dental Society.

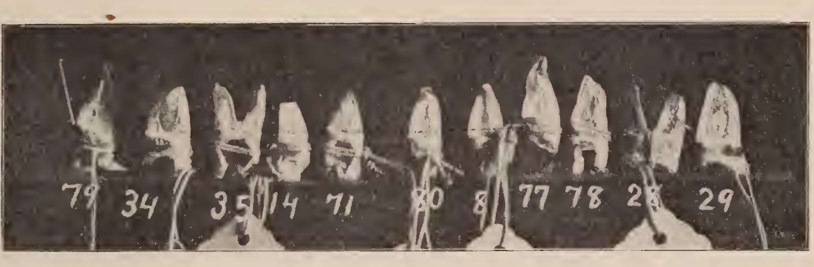
Do you remember the vigorous advocacy of cotton for filling roots by a man of cosmopolitan reputation twenty-five to thirty years ago, and the large number of other materials proposed, tried and found wanting in the later years? Floss silk, wood, tin, lead, gold foil and others, do you ever hear of them now? And so we have arrived laboriously at our present position, which, from the large consensus of opinion, we may assume to be this: The material must be plastic, and capable of being kept in a plastic condition at the will of the operator, bland and a poor conductor of thermal changes, and from our present knowledge these properties are possessed in largest degree by the vegetable gums. Of these several have been proposed and used singly or in combinations, the essential plasticity being obtained by heat or solution or both; the manner of procedure by different operators varying considerably and the results—"but that is another story."



About two years ago I had the honor of presenting before a local society of dentists a paper upon the subject of root filling, and by way of illustration, fillings made by the different members of that society, were shown and commented upon. The discussion was entirely impersonal in character, no one knowing the identity even of his own work. The meeting, it is needless to say, was well attended and the discussion was considered profitable. At the suggestion, and with the material assistance of your executive committee, I have for this meeting undertaken to show by photographs sections of roots, filled by a large number of the members of this society. And in doing this I would eliminate from your minds at the outset any thought that this is to be regarded as in any sense a contest; we shall endeavor to make it so impersonal that no man will recognize his own work or description: What we are after are principles. At the close of the session the cases will be returned to their respective operators for their own private inspection and edification.

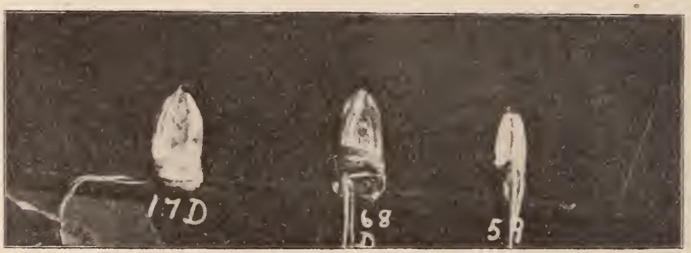
The roots of the teeth to be shown were each imbedded in plaster and mailed to the various members with the request that they be filled according to the usual method pursued in like cases, and returned to the committee, with a brief description of the operation. The response was quite general. The teeth were then removed from the plaster, a number attached corresponding to the number of written description, then the roots were carefully filed down to expose the root canal throughout the entire length. They were then photographed and lantern slides made which I shall now have the pleasure of showing you.

Slide 1, No. 43. Root—lower bicuspid. Dried with alcohol and hot air. Introduced chloropercha on broaches of different sizes. Sealed openings with warm blunt instrument. Result: Section shows division of canal in lower third forming island, and numerous foramina, at least four. Filling perfect at apex, some shrinkage in larger portion of canal. No. 16. Root—a long curved cuspid. Dried with alcohol and warm air. Introduced sandarach varnish on smooth broach. Filled with gutta percha cones softening with warm air. Result: Filling extends slightly through foramen and is perfect throughout apical third. As canal increases in size crownward some air spaces are noticeable. No. 24. Root—Lower incisor. Dried with alcohol and hot air. Introduced eucalyptol, excess afterward taken up with cotton-wound broach. Gutta percha point inserted with pliers and after somewhat softened by the oil, was further softened by heat and packed with broach small enough to pass, say, half way to apex. Result: Apical third neither cleansed or filled, remaining two-thirds shows considerable "room to let."



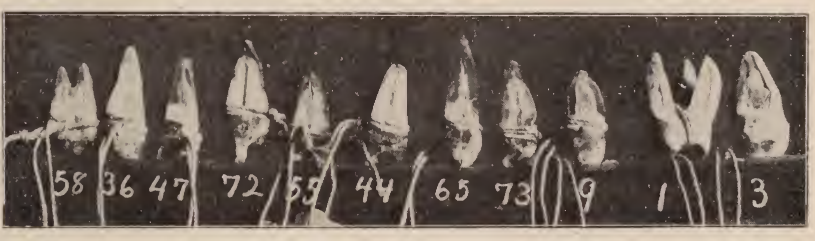
Slide 2, No. 66. Bicuspid root. Canals moistened with eucalyptol, chloropercha pumped in, followed by gutta percha points. Result: No filling in apical third; pulp tissue remaining; numerous air spaces throughout coronal two-thirds. No. 48. Canal flowed with eucalyptol, followed by pink chloropercha till reasonably sure canal is full, then gutta percha cone dipped in eucalyptol and forced in. Small canals sometimes enlarged with hydrochloric acid or Gates-Glidden drill. Result: Portions of filling material reach near to apex, but filling as a whole shows great imperfection as if from shrinkage. No. 43. Shown and described previously.

Slide 3, No. 17. Distal root of lower molar. Alcohol—C. P. sulphuric acid and hydrogen—dioxide applied in order named. Canal dried with hot air, flooded with chloroform and filled with gutta percha points. Result: Canal bifurcated; filled perfectly throughout entire length and *beyond*. No. 68. Distal root of lower molar. Canal wiped with carbolic acid. Introduced chloroform with fine smooth broach followed by gutta percha points, warmed with hot air and forced in. Result: Canal quite large and filling shows numerous air spaces as from shrinkage. No. 59. Lower incisor. Canal enlarged with sulphuric acid and twisted broach, cleansed with soda and dried. "Eucalyptus" (?) applied and canal filled with gutta percha points. Result: Apical fourth not filled; remaining portion very imperfectly.

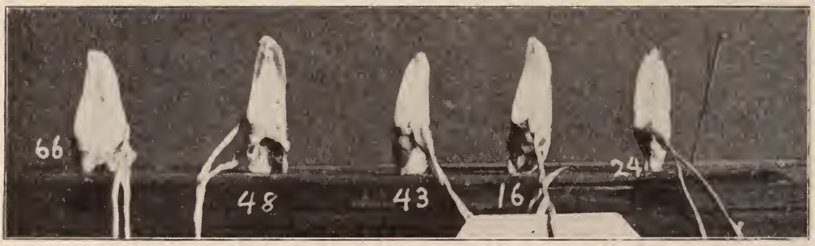


Slide 4, No. 17. Mesial root of lower molar shown above. Chloroform followed by cones. Result: Canal flat, filling only fairly successful. Some air spaces and one foramen not reached. No. 68. Mesial root of lower molar shown above. Carbolic acid, chloropercha and cones. Result: Filling imperfect as in case of distal tooth. Air spaces not as large because canals are smaller.

Slide 5, No. 70. Lower bicuspid. Dried with alcohol and hot air. Canal wiped with creasote and filled with chloropercha and gutta percha points. Result: Chloropercha protrudes through foramen (not shown in slide). Extreme end of canal partially occupied by some metallic substance not mentioned by operator. Mass of gutta percha shows air spaces throughout, although foramen seems to be perfectly closed. No. 7. Lower bicuspid. No data accompanies this tooth, so we are forced to conjecture as to method employed. The appearance is that of gutta percha solution with some portions of solid gutta percha. Result: A filling which extends well to the end of canal, which shows a bifurcation at apex. The mass, however, is porous throughout. No. 45. Lower incisor. Canal cleansed and enlarged with canal drills, three sizes, beginning with largest. Dried with alcohol and hot air, then flooded with sandarach varnish, and while full of same introduced gutta percha points, softened with hot air and packed with cold instrument. Result: It is to be regretted that white gutta percha was used in this case, making the contrast between it and dentine very slight and difficult to show by photograph. The filling is complete to apex and quite homogeneous, no trace of sandarach being discoverable. No. 32. Bicuspid. Root filled with "eucalyptus oil," followed by chloropercha and gutta percha points, the latter preferably of S. S. W. manufacture. Result: Flling extends to apex and is solid throughout upper third. Air spaces occur in lower two-thirds. No. 60. Lower incisor. Canal enlarged with sulphuric acid, dried with absolute alcohol and hot air. Introduced broach dipped in oil cajeput then in iodoform, followed by chloropercha and gutta percha points. Result: Apical fifth not filled, remaining portion quite porous. No. 19. Lower second molar mesial root. Dried with cotton and hot air. Canals moistened with oil of eucalyptus, followed with chloropercha and points. Result: Root shows two canals, both considerably curved. The buccal one filled perfectly to apex, the lingual not filled at all. I might add that the distal root of this tooth (not photographed) shows the filling continuous to apex but quite porous.

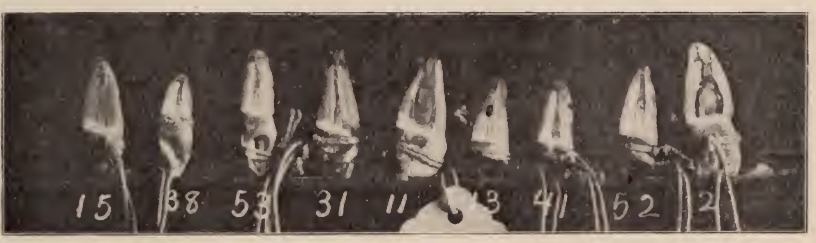


Slide 6, No. 46.—Lower incisor. No data. Traces of material nearly to apex, but filling as a whole very imperfect, apparently owing to shrinkage. No. 23. Lower cuspid. Dried with alcohol and hot air, filled with chloropercha and gutta percha points, also silver wire, having previously measured required length. Operator says he thinks it possible wire has passed through foramen. Result: Chloropercha fills canal to apex. Filling throughout very good indeed. It will be seen that silver wire lacks a considerable distance of reaching apex—by measurement three-sixteenths of an inch. No. 5. Upper cuspid. Canal wiped with oil cajeput then chloropercha pumped in, followed by gutta percha points dipped in cajeput. Prefers four-sided cones of the S. S. White manufacture. Result: Filling reaches apex, but is not homogeneous. No. 57. Lower third molar. Dried with alcohol and hot air, bathed with eucalyptus; chloropercha pumped in, followed by gutta percha points packed with hot instrument. Result: Filling fine as far as it goes, but lacks in one root shown one-eighth and in the other three-sixteenths of an inch of reaching apex. No. 12. Upper bicuspid root. No data. Result: Roots are filled with some metal, possibly tin. Filling, as in the previous case, good as far as it goes, but lacks a good deal of reaching apex. No. 42. Upper bicuspid. Canals enlarged with sulphuric acid, medicated with eucalyptus. A small amount of chloropercha placed in each canal, followed by gutta percha cones. Result: Filling in one root reaches apex, in the other lacks the eighth of an inch. Mass somewhat porous.



Slide 7, No. 80.—Lower incisor. No data. Result: Canal filled throughout, but mass quite porous. No. 8. Lower bicuspid. Canal moistened with eucalyptol. Introduced solution of gutta percha in eucalyptol followed by cone made from Caulk's diamond stopping. Result: Root filled solidly to apex. No. 77. Upper cuspid. Chloropercha introduced on broach, wound with new fibers of cotton followed by gutta percha cones. Result: Filling does not reach apex by the eighth of an inch, but good as far as it goes. No. 78. Upper bicuspid. Root moistened with eucalyptol, same manner as No. 77, then gutta percha point forced to apex if possible. Sometimes uses chloropercha, but prefers not to do so. Result: Filling reaches apex in both canals, but not perfectly solid. Portion of broach left in, accidentally or otherwise. No. 28. Upper molar. Lingual and mesio-buccal root shown. Canals enlarged with aromatic sulphuric acid, lubricated with oil cassia. Chloropercha pumped in, followed by cones in usual manner. Result: Filling in lingual root reaches nearly to apex, but is very porous and not adherent to walls. Buccal root shows two canals, neither of which is filled within an eighth of an inch of apex. One contains portion of broken broach. No. 29. Lower molar, mesial root. Chloropercha pumped in with smooth broach, followed by gutta percha points. Result: Filling reaches every part, even where the two canals run together about half way down, but mass is porous to a considerable extent.

Slide 8, No. 79.—Upper cuspid. Operator sends no description of procedure, but thinks there is something "crooked" at the apex of root and hopes we may take the conceit out of him. I trust we shall be able to accommodate him. Result: Filling stops short of apex by over one-eighth of an inch and shows some air spaces. No. 34. Lower molar, mesial root. Moistened with oil of cajeput, applied small amount of chloropercha, followed by cones, heating and forcing to place. Result: Filling reaches apex in each of two canals and appears to be tight at extreme end—somewhat porous in larger portion. No. 35. Upper molar. Lingual and disto-buccal roots shown. Canals wiped with eucalyptol. Chloropercha pumped in, followed by gutta percha points. Result: Canals very small and filling very creditable. A portion of white material has been used, making it difficult to show by photograph. No. 14. Lower bicuspid. Canal moistened with eucalyptol. Chloropercha worked in with broach, followed by gutta percha points, then small amount of oxychloride of zinc placed over this and forced in by



pressing with small piece of spunk. Result: Filling reaches the apex, but a large crevice follows one wall throughout its entire length. No. 71. Upper bicuspid. Operator says, "Fill with chloropercha and G. P. points." Result: Two canals, one filled quite perfectly, the other lacks the eighth of an inch of reaching the apex.

Slide 9, No. 11.—Lower molar, mesial root. Canals enlarged with sulphuric acid, dried and filled with chloropercha and gutta percha points. Result: A very satisfactory filling with the exception of the apical fifth of one canal. No. 13. Lower bicuspid. Moistened with oil eucalyptus. Measure size and length of canal by broach wound with cotton. Pumped in "chloro-eucalypto-percha" prepared as follows: Chloroform (two drams), oil eucalyptus (one dram), gutta percha to make thick cream solution. Then add hydronaphthol (ten grains), followed by white gutta percha canal points. Apply hot air and pack. This method followed for past fifteen years—does not recall a single failure. Result in *this* case: Filling does not reach apex by over one-eighth of an inch and mass has shrunken from wall to a considerable extent. No. 41. Lower incisor. Dried with alcohol, followed by Evans' root drier. Moistened canal with eucalyptol. Pumped in chloropercha, followed by gutta percha points. Result: A perfect filling. No. 52. Lower bicuspid. No description. Result: This root appears to have been filled with a solution of sandarach and gutta percha points. Filling reaches apex, but shows considerable porosity. No. 2. Lower molar. No data. Result: The cavity of decay in this tooth contains an amalgam filling, but the roots contain nothing.

Slide 10, No. 65.—Lower bicuspid. No data. Result: Filling very imperfect. No. 73. Lower bicuspid. No data. Result: A perfect filling. Notice two foramina. No. 9. Lower bicuspid. "Chloropercha and gutta percha points." Result: Two exceedingly fine canals perfectly filled—the material being white will not be easily differentiated. No. 1. Upper molar—lingual and mesiobuccal root shown. Filled in usual way with chloropercha and gutta percha points. Result: Filling in lingual root reaches apex, but is quite porous, buccal root filled with broach, which, the operator *says,* was broken by his assistant. No. 3. Lower molar, mesial root. Used myrtol to flood canals, followed by gutta percha points. Operator thinks piece of broach was left in. Result: Neither canal filled quite half way, except for the broach.

Slide 11, No. 58.—Upper bicuspid. Root filled with solution of gutta percha in eucalyptol and excess forced out with hard gutta percha points. Result: Filling reaches apex in both canals, but somewhat porous. No. 36. Lower bicuspid. No data. Result: Filling reaches apex, but shows porosity owing to shrinkage evidently. No. 47. Lower bicuspid. The dry canal is moistened with eucalyptol, a cone of Hill's stopping is made by warming and rolling between thumb and finger and stuck on end of instrument small enough to pass to end of canal. This is warmed, dipped in eucalyptol, carried into canal and churned into a pasty mass working to end and following with other pieces of gutta percha and packing solidly. Result: A perfectly solid filling to the apex. No. 72. Upper cuspid. Canal filled with chloropercha. Gutta percha point dipped in sandarach varnish and inserted. Result: A perfectly solid filling which, however, stops short of the apex by nearly an eighth of an inch. No. 55. Moistened canal with eucalyptol and filled with gutta percha points. Result: A porous filling reaching apex. No. 44. Lower bicuspid. No data. Result: A filling showing numerous air spaces.

Slide 12, No. 15. Lower cuspid. Canal pumped one-third full of chloropercha, followed by gutta percha points and two round pellets of gutta percha slightly warmed and crowded to place. Operator thinks the root is thoroughly filled, but prescribes tinct. iodine topically in event of soreness. Result: Filling nearly one-fourth of an inch "shy" of apex—wide crevice along one wall. I think the medical prescription will be needed. No. 38. Lower incisor. No data. Result: Traces of filling about half way to apex and very porous. No. 53. Lateral incisor. Filled in usual way with chloropercha and gutta percha points. Result: A somewhat porous filling reaching the apex. No. 31. Lower cuspid. Put few drops of chloroform in canal, then introduce gutta percha points and press firmly to place. Result: A very imperfect filling on account of great shrinkage.

I have now shown you about fifty root fillings which have been made by dentists of far more than average ability. Our study would be incomplete if we fail to draw a practical lesson from the exhibit. Of the fifty fillings we may, by a rather liberal construction of the rule, say that fifteen are perfect or practically so—not quite one-third. Of the remainder, a considerable number are of good density and only lack more care and thoroughness in carrying the filling to the end. In some cases this seems inexcusable, there being a freely open canal beyond the filling. The methods of the different operators, after allowing for slight personal modifications, divide themselves into three classes:

First, the method of applying a material in the form of a solution by a pumping operation and to be followed by a cone of solid material.

Second, the introduction of an oil or other solvent into the root followed by a cone of hard material, with the intention of only partially dissolving or more properly softening it, and by a churning process working it into a pasty mass, which it is hoped, will fill every part of the canal.

The third class comprises those in which a solution of sandarach is introduced and followed by solid material in the form of cones.

The argument for and against the first operation apply equally to the third class.

The argument in favor would, I suppose, be ease of manipulation, and the argument against, danger of too great fluidity and consequent shrinkage.

The argument for and against the first operation apply equally conserving the integrity of the gutta percha cone, thereby making it likely to be carried nearer to the apex of the root.

Of the fifty fillings studied, thirty-one were made by the gutta percha solution method. Of these, ten are in the class of "practically perfect." Nine were made by the introduction of some solvent followed by solid gutta percha, of which number three are in the "practically perfect" class.

Three were made by introducing sandarach solution followed by gutta percha cones, of which number one is perfect. The proportion in each case being about one in three.

Of eight *absolutely* perfect fillings, four are made partially with chloropercha, two with the use of merely a solvent, one with sandarach and in one case the method is not stated. We may fairly conclude from the foregoing that perfect fillings may be made in any one of several ways, depending on the care and skill of the operator, and that no one method is entitled to be called the "best."

However, those who lean toward the discarding of chloropercha (myself among the number) are probably entitled to assert that the larger canals are better filled with the more solid mass of material, and that chloropercha does the best work in the smaller canals. Indeed these studies throughout have proven to me that the smaller canals are less liable to show leaky fillings than the larger ones.

SOME AMALGAM EXPERIMENTS.*

By W. V-B. Ames, D. D. S., Chicago, Ill.

Just seven years since at a meeting of the Illinois State Dental Society, I happened to be selected to inaugurate a series of experiments looking to the fixing of some definite facts regarding alloys for amalgam. I say "fixing of some facts" because it seemed at that time to the council of the society and all concerned that such results should be obtainable by a conscientious effort on the part of some one of our number. For some reason we were not aware that the work of our Dr. G. V. Black was to commence so soon, if it had not already been begun, so some work along the line was mapped out by me.

The original intention was an investigation of the peculiarities of mixtures of alloys and mercury. Before getting far into the matter, it seemed apparent that a more valuable line of work would be with mixtures of metallic precipitates with mercury, since by this means varying proportions of the various metals might be exactly tested with a smaller outlay of labor and material.

In making alloys it is necessary to make a melt of a considerable amount of the metals entering into the alloy, in order to be sure of having a fairly definite mixture, while in the use of the precipitates a few grains of each of the metals will give a test mix. Then again the crystal seems the ideal form for amalgam purposes. Amalgamation of the high grade metals is readily obtained when in this crystal form, while with alloy filings there must be a large proportion of the easily amalgamated tin for ready amalgamation.

The diversity of opinion also as to the proper method of making melts for alloys, the acknowledged difficulty of obtaining an ingot which is uniform throughout, the difficulty of obtaining the incorporation of some of the metals volatile at the melting points of some other metals of the alloy, and the difference of specific gravity made the crystal form apparently an advantage over the alloy.

Some results of experiments with the metals in the precipitated crystal form were reported to our State society at the 1895 session. During the year previous to that meeting and during which I had been carrying on these experiments, and making use in my practice o amalgams of this sort, the work of Dr. Black on the alloys became known, so with the matter in such efficient hands my experiments were dropped, although those of Dr. Black were on a different line. As a result of the investigations of Drs. Wedelstaedt, Black and others, I feel that the question of amalgams from alloys has been placed on a much more tangible basis, the questions of strength and stability, and shrinkage and expansion having been very thoroughly elucidated. We no doubt have much more reliable alloys furnished us than before these investigations. As to whether the amalgam craze to which this work has been an incentive and a sanction has been damning to the general standard of dental operations I will not attempt to say.

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*Read before the Odontological Society of Chicago.

Of the new and ostensibly perfected alloys there is still a range in physical condition and working qualities which indicates that there are still some technical questions to be settled. We find them so much at variance that one or the other, or all, must be faulty. Edge strength, which we hear much talked of by manufacturers, I fear is a quality foreign to amalgams, except in a comparative way.

In the measurements of amalgam masses during setting to observe the change of form and volume and in the adjustment of formulae as a result, there has been an attempt to bring the alloys to such a physical condition that during setting the change of volume will be nil. While at first thought this naturally seems reasonable and desirable, I have been led through some observations and measurements of cement masses during setting to believe that this effort has been carried too far. While we can all agree that shrinkage in amalgam should be very prejudicial, first, last and always, I am very much inclined to believe that a much greater expansion than has ever been advocated, is not only safe but advantageous. There are cements much used, the Harvard, for example, which expand as much as forty points as estimated in measurements in a Wedelstaedt steel tube, and I am confident that the expansive force of a cement mass would be more positive than one of amalgam, and yet who has ever had any optical evidence of the expansion of cement within a tooth.

If in working to produce an alloy which will give an amalgam which will set with less than one ten thousandth of an inch expansion in a Wedelstaedt tube, there is the least danger of a shrinkage through the maker not being able to carry out his good intentions or through some fault of manipulation in the hands of the dentist, then I should say by all means let us use an alloy which will give an expansion under any possible condition, this expansion being such that we can be sure of its never gravitating to a shrinkage and yet such that we can feel justified in its use in all classes of cavities. I expect to meet with contention and opposition when I state that I believe that twenty points .002 inch in a Wedelstaedt tube would not contraindicate the use of an amalgam for tooth filling.

This leads me up to my observations in the clinical use of amalgams made from precipitates of silver, tin, copper and gold. In this form the metals do not impart quite the same working qualities as in alloys in given proportions.

According to my records a much smaller proportion of tin accomplished a satisfactory end than in an alloy, and it was found that as little as two and one-half per cent of gold incorporated with silver hastened setting and made some creditable fillings in real use. Copper and silver seemed to give good results in all proportions.

I did not then have the opportunity to make such accurate measurements as were soon introduced in the work of Dr. Black.

In taking up the line of observations again recently, being equipped for making such measurements, I find that all such combinations as were employed in my clinical use of these amalgams were decided expanders. These results have led me to make clinical use of pure silver amalgam, to satisfy a curiosity as to how apparent this considerable expansion really is in such clinical use. My applications of pure silver have been to undersized cavities, avoiding attenuated extensions. In such I would not have known by appearances after several days, that the amalgam used was a decided expander. There is only a frosted appearance of the surface which is removed for a finish exactly as is presented in the use of most amalgams said to be just above zero during measurements.

In a liberal admixture of copper amalgam with amalgamated silver precipitate the expansion is brought down within a safe limit for use, as I believe, in cavities of any description whatever, the bad features of the copper amalgam being *obliterated* by being combined with equal parts of amalgamated silver.

EARLY EMBRYONIC DEVELOPMENT AND THE FORMATION OF THE MOUTH AND NOSE CAVITIES.*

By F. B. Noyes, D. D. S., Chicago, Ill.

Our present knowledge of embryology has been acquired during the last half of the century just closed and is one of the results of the development of the cell theory. If we go back into the seventeenth and eighteenth centuries we find the most fantastic notions of development, all of which were purely speculative and necessarily so, for the means of investigation had not been developed in the higher forms of the microscope, and these fantastic notions were dispelled only by the improved means of observation. The subject as it stands to-day has been one of the phases of the development of the cell theory and we may well look to the development of thought in this line of biological study as an introduction.

Since the time of Schleiden and Schwann, who in 1839 announced the cell theory, a vast amount of work has been done, at first in the analysis of the bodies of plants and animals, studying the forms and origin of cells making up the tissue, and later in the study of the functions and activities of the cells and their importance in inheritance and transmission.

We can perhaps not do better than to make a somewhat extended quotation from Prof. Wilson as a statement of the cell theory. He says (Introduction to "The Cell in Development and Inheritance"): "In all the higher forms of life, whether plants or animals, the body may be resolved into a vast host of minute structural units known as cells out of which directly or indirectly every part is built. The substance of the skin, of the brain, of the blood, of the bones or muscles or any other tissue, is not homogeneous as it appears to the unaided eye. The microscope shows it to be an aggregate composed of innumerable minute bodies, as if it were a colony, or congeries of organisms more elementary than itself. These elementary bodies, the cells, are, essentially, minute masses of living matter or protoplasm, a substance characterized by Huxley many years ago as 'the physical basis of life' and now universally recognized as the immediate substratum of all vital action. Endlessly diversified in the details of their form and structure, cells nevertheless possess a characteristic type of organization common to them all, hence in a certain sense, they may be regarded as elementary organic units out of which the body is compounded.

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*Read before the Odontographic Society of Chicago.

"In the lowest forms of life the entire body consists of but a single cell. In the higher multicellular forms the body consists of a multitude of such cells associated in one organic hole. Structurally, therefore, the multicellular body is in a certain sense comparable with a colony or aggregation of the lower one-celled forms. From the physiological point of view a like comparison may be drawn. In the one-celled forms all of the vital functions are performed by a single cell. In the higher types they are distributed by a physiological division of labor, among different groups of cells specially devoted to the performance of specific functions. The cell is therefore not only the unit of structure, but also the unit of function."

In the earliest work Schwann regarded the cell wall the important part and the soft substance contained in it as a waste product, because in important plant tissues such as wood it entirely disappears leaving only the lifeless walls. Hugo von Mohl gave the name protoplasm to this soft substance; Kölliker, Cohn, Max Schultze, and others showed that the protoplasm was the essential part, as many animal cells, for instance, the white blood corpuscles, have no cell wall, and they also showed that the protoplasm contained within it a smaller vesicular body called the nucleus. In later years the knowledge of cell structure has advanced still farther it being known that neither the protoplasm nor the nucleus are simple and final substances as they were supposed to be, but that they are, both chemically and structurally, complex. The nucleus is found to be made up of at least two chemically different substances, one of which, called the chromatin, combines with certain analin dyes showing the color, while the other, the achromatic, does not, but remains colorless.

By experiments with single celled forms it has been shown that if the nucleus is removed from a cell it may continue to live for a time, the destructive changes going on in its protoplasm, but it will not assimilate food material, it will not grow or divide and sooner or later will die. It is also shown that when constructive changes are going on in the protoplasm of the cell as in secretion of gland cells there are also changes in the nucleus; and cells whose protoplasm is active contain large nuclei, often of complicated form, while those whose protoplasm is inactive contain small and vesicular nuclei except during division. From these and many other facts it may be stated that the nucleus exerts a controlling and directing influence over the constructive functions of the cell and its division.

The knowledge of the relation of the nucleus to the protoplasm has been still further developed, with the advancing knowledge of cell division. Cell division, as at first described by Remak and Kölliker, was a simple process consisting only in the division of the protoplasm and the nucleus, both of which they conceived to be simple substances, and could be described as the stretching in two of a lump of jelly. This division was more or less hit or miss and uncertain as to the parts received by the offspring from the parent cell. It was not until a much later time that the cell was shown to possess a complete mechanism for the exact and systematic division of the substances of the protoplasm and nucleus of the parent to the resulting cells. It required many years of labor to correct the mistaken notion of the enunciators of the cell theory, that the cells of the body may arise in development from a primitive and structureless substance which they called the "primitive blastema," and prove the hypothesis clearly stated by Virchow in 1855 that every cell is derived by division from a preëxisting cell, making a complete line of cell divisions back to the single cell of the parent organism.

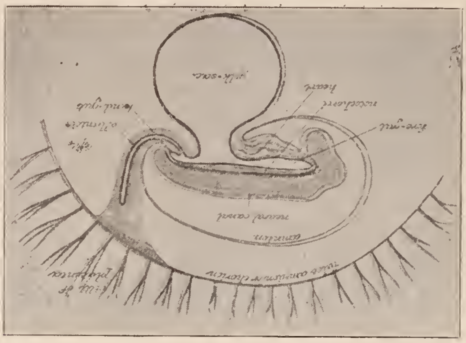

Fig. 1.

The later studies of cell division have shown that the chromatin of the nucleus, which in the functioning condition of the cell is usually arranged in the form of a network, in cell division first forms a continuous thread which shortens and thickens and finally breaks up into short "U" or "V" shaped pieces called chromosomes which arrange themselves at the equator of the nucleus with the angle toward the center. The chromosomes then split lengthwise into similar halves and one-half moves toward one pole of the nucleus and the other to the other pole where separate nuclei are formed, the protoplasm dividing at the same time. This shows the beautiful mechanism for the distribution of the chromatin to the resulting cells, the importance of which is realized when we remember that this chromatin is to superintend all of the functions of the resulting cells controlling their formative activities.

It has been shown that the number of chromosomes appearing in the cells of an organism in their division is a characteristic of the species and constant in all the cells of the body, and always an even number. And further, that the number of chromosomes in the germ cells is always half that of the cells of the body, so that in fertilization by the union of male and female cells (which constitutes fertilization) half of the chromosomes are of male and half of female origin. These split longitudinally so that the two cells resulting from the first division of the ovum contain the full amount of chromatin equally derived from the male and female parent. These observations obtained in the working out of the cell theory furnished the demonstration of the evolutionary idea that the two sexes are equal in inheritance.

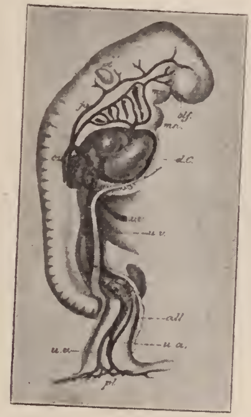

FIG. 2.

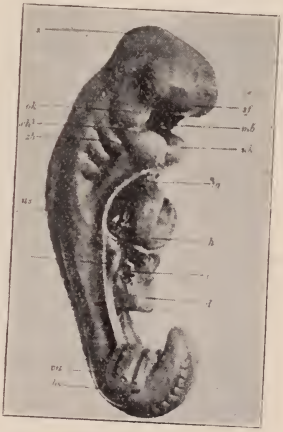

FIG. 3.

In all of the further development of the individual we must remember that the chromatin is to control the development and activities of the cell and by this mechanism of cell division called karyokinesis is systematically distributed, sending that which is to develop nerve cells to one part, that to develop muscle cells to another, so coördinating the development of various parts that when we see the development of the enamel forming organ from one set of cells we see at the same time the development of the dentin-forming organ from another set of cells.

It would lead us too far and require too much time to develop all of the steps in the growth of biological thought which have brought the cell theory and the evolutionary theory together and which lie at the foundation of modern ideas of inheritance and transmission. I have endeavored to bring out enough to show that in the development of the individual there is a continuous multiplication of cells and a progressive differentiation, but all changes are systematically executed under a special mechanism. In this development from a single cell we will see that the individual passes through successive stages which correspond to the steps the race has passed through in its development, or ontogeny repeats phylogeny.

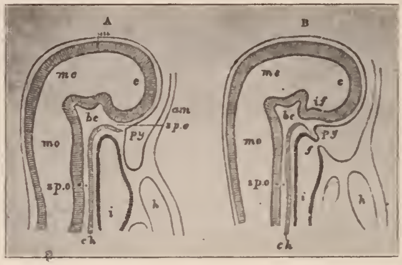

FIG. 4.

The fertilized ovum is a single cell, but it contains that which determines the entire development and all of the functions of the adult organism. It may therefore be compared to the single celled animal and at this stage the individual may be said to be in the æmeba condition.

This single cell divides into two, then four, then eight, and so on, and these divisions take place in a definite way, constituting the process known as segmentation. The cell being more or less spherical, the first division occurs as if by a plane passing through both poles dividing it into hemispheres, the second also through both poles at right angles with the first divides the hemispheres into quadrants and the third at right angles with the other two, in a position corresponding to an equator divides the four cells into eight. This goes on, the lines of division following regular geometrical laws until the single cell is converted into a spherical mass of cells not very much larger than the original ovum.

In development, as might be expected, we find differences in different classes of animals. While they all follow a similar development up to their degree of perfection or specialization, in one certain evolutionary steps are most marked and recognizable, in others different stages are more clearly seen. In some animals as in the chick, the ovum is provided with a great amount of nutriment material so that the active protoplasm really floats on a sphere of non-living matter. In others, as the frog, the egg contains much yolk, but only enough to make the cells around one pole after the first few divisions much slower in division and so much larger than those around the other leading to the first differentiation of cell form.

In man we find a similar condition, so that after the first few divisions the cells of the upper pole divide much more rapidly than those of the lower, and grow down over the others, inclosing them. This may be illustrated with the clay. When the large cells have been entirely covered in by the small ones, the small ones continue to multiply more rapidly and fluid collects inside the sphere, leaving the large cells adhering to the inner surface of the small cell layer at one pole of the sphere. At the upper pole where the sphere is made up of two layers of cells there is an opaque spot, or the "area pellucida," from only part of which the embryo is developed, the rest forming organs to provide it with nourishment during the embryonal condition.

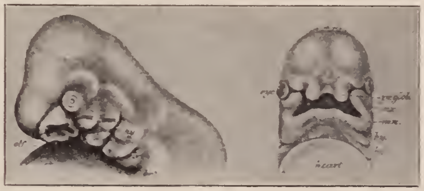

FIG. 5.

I had intended to model with the clay the further development of the embryo and am very much disappointed at the failure of my plans, and so will have to pass over these stages of development very rapidly using only the lantern.

Starting from the center of the opaque area on the upper surface of the sphere or blastula there appears a streak known as the primitive streak caused by the appearance of a rod of cells lying between the two layers and from the side of this rod or notochord a third kind of cell different from either the large or small cell layer is formed. These three kinds of cells make up the three layers of the blastoderm and represent the first step in differentiation; or to state it in a different way, all of the chromatin which directs nerve cell activity has been sent to the outer small cell layer, or epiderm, all of the chromatin which directs muscle cell activity, etc., has been sent to the new cells of the third layer, or mesoderm, while the large cells of the inner layer or hypoderm contain chromatin to direct most of the secretory activities and the formation of the epithelium of the elementary canal.

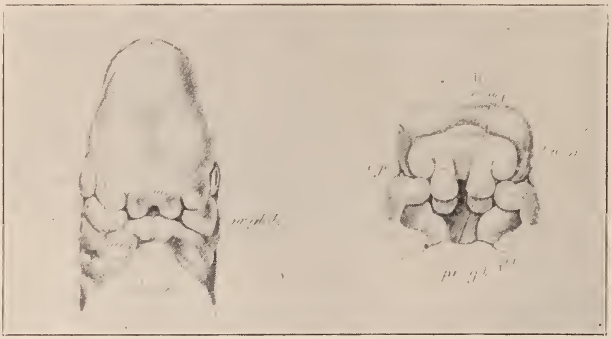

FIG. 6.

The epidermal cells on either side of the primitive streak grow rapidly, forming two ridges with a groove between them, which grows deeper and deeper until the ridges bend over and join, inclosing a tube which is to be the canal of the spinal cord. The anterior end of this tube enlarges into three bulbs which correspond to the ventricles of the brain and as they increase in size they fold over ventrally or toward the center of the sphere till the first and second are at right angles to the original tubular part.

As the outer layer forms the tube of the central nervous system, the inner layer folds off a blind pouch from the general cavity of the sphere which is to form the anterior part of the alimentary canal. By this time development is complicated by the formation of the embryonal membranes the amnion and allantois, but we may omit these entirely for our purposes.

The diagram from Quain's Anatomy, Figs. 1 and 4, illustrates the condition just described showing the embryo in longitudinal section, the bending over of the anterior end of the neural canal to form the mid and fore-brain and the fore-gut or esophagus, a blind pouch ending anteriorly under the mid-brain and posteriorly opening into the cavity of the sphere now called the yolk sac. This pouch is lined by hypoblast and covered by mesoblast and epiblast. The heart has already begun its development in the mesoblast on the ventral side of the fore-gut.

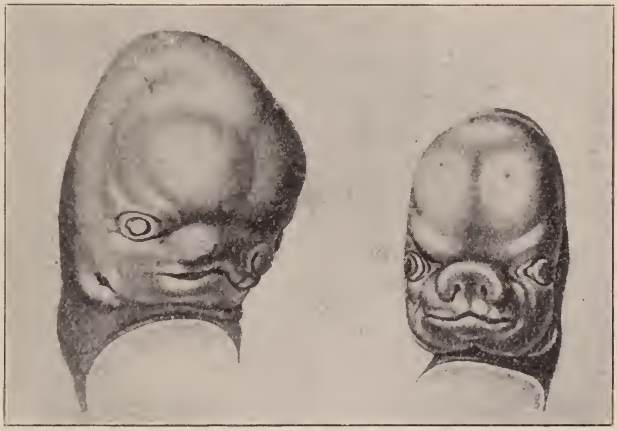

FIG. 7.

There now appears what are called the gill slits, openings from the fore-gut through its wall to the surface of the embryo which are separated by thickenings of the wall forming arches around the gut known as the visceral arches, at the center of each of which is found a blood vessel. These structures are to be compared to the gills of a fish, which are slits through the wall of the esophagus to the outside so that water taken into the mouth may pass out through the slits. At this time, too, the arrangement of the blood vessels exactly resembles that of a fish and the individual may be said to be in the fish stage of development.

Fig. 2 from Quain's Anatomy and Fig. 3 from Hertwig's "Text Book of Embryology," shows the embryo at this stage and the arrangement of the blood vessels. As the fore-brain grows ventrally the first visceral arch or mandibular arch also grows in the same direction and the space between the inferior surface of the fore-brain and the upper surface of the first arch is the beginning of the mouth and nose activities, now called the stomodeum. From the base of the mandibular arch is seen also the rounded bud, which is beginning to grow forward along the base of the fore-brain to form part of the maxillary arch, and finally the upper jaw. At this time also the area which is to develop the sense of smell appears on each side at the outer and lower portion of the fore-brain. The olfactory areas grow out of the base of the fore-brain, at first being on the outside of the head and in the later development being inclosed, leaving an opening to the surface, the nostril.

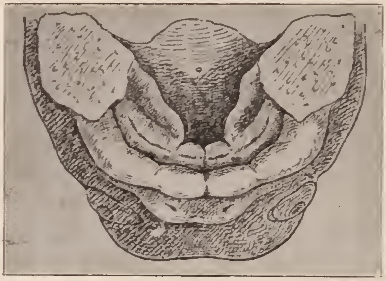

FIG. 8.

If we have gained a correct idea of the conditions just described by means of the pictures it will be understood that by the growing forward of the mandibular arch there is left an almost cubical space between the lower surface of the fore and mid-brain and the upper surface of the mandibular arch. Fig. 3, from Hertwig's Embryology. This is a part of the outside world and is inclosed to form the mouth and nose cavities. This process is best understood if we think of the development from the anterior end of the fore-brain of a process which may be described as a curtain dropping down making a central piece and the bud from the mandibular arch on each side growing forward to unite with it, leaving a slit between them and the mandibular arch which will be the mouth. In order to get a correct idea of this process it must be followed somewhat more minutely.

As the fronto-nasal process develops it is made up of four rather bulblike portions (Figs. 5 and 6), two occupying the center and which develop into the intermaxillary bone containing the incisor teeth and the center of the lip; and two side or lateral processes which grow out around the olfactory area and form the alae of the nose surrounding nostril. These do not unite again with the central parts, but the end stops over the point where the maxillary bud unites with the central process (Fig. 7). A failure of union causes the deformity of harelip, the opening in the lip extending to one, or if double, to both nostrils.

When the central part of the fronto-nasal process has united with the maxillary bud on each side the arch of the upper jaw is complete and the original cubical space or stomodeum is inclosed, leaving only the slit between the maxillary and mandibulary arches which is to form the mouth, but the inclosed space is in one chamber, there being no separation between the mouth and nose cavities. The time of this development in the human embryo may be placed at about the fourth week.

The separation of the mouth and nose cavities occurs by the development of horizontal ingrowths from the three parts making up the maxilla and beginning at the center and progressing backward. First a small triangular piece from the central part of globular processes of the fronto-nasal process this uniting with the horizontal or palatal process of the maxillary buds on each side until these reach the apex of the triangle which will be the intermaxillary bone, just a little way back in the palate and from here backward they unite with their fellow of the opposite side. This is best seen by removing the mandibular arch and viewing the parts from below Fig. 8, from Hartwig's Embryology.

The deformith of cleft palate is then a later development than that of harelip and either may occur without the other, though they are usually found together. The cleft of the palate usually turns to one side at the front, running out between the cuspid and lateral unless it is double, when a detached piece is found in the center in front containing the incisors.

As soon as the nose and mouth cavities are separated and as fast as bone is formed in the septum most of the space in the bone is occupied by the tooth germs. At birth almost all of the space between the roof of the mouth and the floor of the nose and the floor of the orbit is occupied by the developing teeth.

The development of the face from birth to maturity is characterized by a growth downward from below the eyes, a baby's eyes being at the center of the face, an adult's in the upper third of the face. This growth at first accompanies or is caused by the growth of the permanent dentition, and as the permanent teeth and erupted the spaces that they occupied are converted into the maxillary sinuses. These changes in the bones and the general appearance of the face are illustrated by the dissected skulls.

SOME RECENT ADDITIONS TO DENTAL MEDICINE.*

By A. W. Harlan, M. D., D. D. S., Chicago, Ill.

In presenting a notice of recent additions to dental medicine, I do not claim originality, as my sources of information necessarily come from the published records of experimenters and from clinical demonstrations. During several years past we have had presented to us many germicides, antiseptics and disinfectants, as well as local anesthetics. In looking over a list of remedies we might include also agents to sooth or stupefy or produce sleep, or to relieve pain by their internal administration; the list is so large that I cannot include all of them, so I must select one or two of each class to write upon. First in importance I consider the new method of using

CASTOR OIL.

As you all know, many remedies have been used for the relief of neuralgia and neuralgic pains. It is only within the past year that the administration of large doses of castor oil have been found efficacious for the relief and control of nerve pain. The best method of using it is to give it in capsules of one drachm, giving four capsules before breakfast or giving one-half ounce to one ounce in all daily for from one to three weeks. At first it was found that it acted more or less violently on the bowels, but after three or four days, they did not seem to be disturbed, and the neuralgic pains began to disappear. The dose may be larger than I have mentioned in more severe cases, but usually one ounce a day will be found sufficient.

PROTARGOL AND LARGIN.

These are among the best of the newer silver preparations, protargol having about 8½ parts of silver to 91½ protein, and largin having $11\frac{1}{5}$ parts of silver to $88\frac{4}{5}$ of albumin. I have used these agents to check pus formation and in inflammations of the mucous membrane up to twenty per cent solutions of the former and ten per cent of the latter. I also use them in the sensitive walls of the teeth to correct this condition. Both of the preparations are useful in old sluggish abscesses, and in dilute solutions about one-half of one per cent in suppurative conditions in the antrum of Highmore. Both of these silver salts are valuable in the treatment of fungous growths. They will not stain the tissues except after prolonged use.

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*Read before the Nebraska State Dental Society.

MERCUROL AND FORMALIN.

Mercurol is a disinfectant compound of about ten per cent of metallic mercury and ninety per cent yeast reaction. It is to be used in cases where corrosive sublimate would be indicated and it is soluble in water and does not coagulate albumin which, as is well known, is an advantage. It will not injure instruments and it may be used in pulpless teeth as an injection in sinuses around unsound bone and anywhere that the pus microbe is found. Formalin or formaldehyde is growing in importance as a disinfectant in spite of some adverse criticism.

There are so many uses for it that I cannot hope to enumerate all of them. It has been found of great value to check sweating of the feet, combined with alcohol, as a dressing in place of iodoform and other iodine compounds, as a disinfectant of rooms, clothing, etc. One fact is to be borne in mind, however, and that is, it must be mixed with steam as the vapor of formalin alone is deleterious to those using it. If it is used for bedding without this precaution, persons using it may be overcome by the fumes due to the animal heat.

Wounds heal without suppuration when formalin gauze is used. As an agent for use in the sensitive walls of teeth it is of great value. One-tenth of one per cent in water will destroy the fou odor from a fetid antrum and it may be used for scrubbing the tongue and mouth to destroy foul odors.

CHLORETONE, HOLOCAIN AND NIRVANIN.

All of the above agents are local anesthetics. It is well known to you that cocaine hydrochlorate and eucaine hydrochlorate 3 are also anesthetics as well as many other substances which I do not need to mention; of these two eucaine is far safer in from one to two per cent solutions made with boiling water. Holocain, which is a synthetic compound, is soluble in water and is far less dangerous to use than cocaine, is less irritating, and when used on the eyes will not dilate the pupils. As a local anesthetic for extracting a pulp the pressure method of anesthesia is best, for extracting a tooth, a two per cent solution injected on each side of the tooth, about one minim in all, will be quite successful if about five minutes are allowed to elapse before using the forceps. The gums should be painted with an alcoholic solution of carbolic acid, twenty per cent, before introducing the needle. Chloretone has been used as a local anesthetic with good results in nearly all cases. I have not used it as a general anesthetic. It is a powerful depressant and is eliminated slowly, and the only antidote is external warmth and the copious drinking of hot water. It is a good germicide and solutions of chloretone do not need the addition of a sterilizing agent. No fatal cases have been reported, but I prefer eucaine and holocain. Nirvanin may be boiled repeatedly without losing its anesthetic property. One-half to three-fourths of a grain is reported to be the safety line in injecting it for the extraction of a tooth. A one per cent solution is quite strong enough for use and one-half that strength is safer. Tannic acid is an antidote for it with various forms of stimulants. It does not require the addition of a sterilizing agent as it is strongly antiseptic.

Local anesthetics while much used are not altogether harmless, as most of them poison the blood stream and it may require days before it is completely restored to its normal constituents. If I were extracting many teeth I would prefer nitrous oxide; if only a few I would use holocain or eucaine 3. For difficult extractions a general anesthetic is preferable at all times with a competent medical man present to assist.

POTASSIUM AND SODIUM AND PAPAIN.

Some years ago it was proposed by Dr. E. Schreier, of Vienna, Austria, to destroy the remnants of a pulp by using kalium-natrium. The proposition was somewhat startling as the author proposed to convert the pulp into a saponaceous mass and then wash it out from its habitation. I have watched the journals for some years to see how this idea struck the professional mind. Up to this date I have not been able to discover that the proposition had gained much impetus. I readily understand that any process for the disintegration of pulp tissues must at once appeal to all who had a desire to get rid of pulp tissue. The method of using the kalium-natrium at first sight seemed most pleasing, but as it was worked into the tissue it seemed a tedious process. Recently I was told by an enthusiast that this was the only method of removing the pulp that was safe and secure. I doubted this and, as it has been some years since the method was proposed, I conclude that it has not gained universal attention. Any one who has the time and patience to try the picking of this substance into the body of a pulp may try it, but he will leave it when he knows the value of

PAPAIN.

Papain is the alkaloid of the *carica papaya*, which is obtained from the papaw, a perfect digester. I have been for some years experimenting with papain, and I am at this time able to tell you that all methods of digesting a pulp compared with this fall into comparative insignificance. If you will take one grain of papain and one drop of glycerine and a drop of a one to two hundred solution of hydrochloric acid and mix them together into a paste and apply this to a dead pulp and seal it into a cavity for two weeks, you will find that the pulp has been digested. The modus operandi is as follows:

The pulp must be destroyed by arsenic. I leave the arsenic in the tooth for from two to three days. Then after removing it and cutting away the bulbous portion of the pulp the paste is applied directly to the remains of the pulp and sealed into the cavity with gutta-percha or oxyphosphate of zinc. This must remain for an indefinte period, generally two weeks. When the patient returns, after applying the rubber dam, the covering is removed, and we generally find that the pulp has been converted into a jellylike mass, which resembles glue. This is easily removed with a broach or by washing with peroxide of hydrogen. There is no putrefaction and no pain. In all small roots and tortuous canals the pulp, if exposed to this digester, is completely disintegrated. This does not occur with any other agent that I am conversant with. If you use chromic acid, or any other acid, you have irritation. If the pulp is allowed to remain there is apical irritation, but this method prevents all this, as it is the one agent, so far known, which will act alone on the dead tissues and not irritate the living. Will you try this, as compared with pulp mummification, always an uncertain process, and when supposed to be perfect, you have a lame tooth after two or three years? I have presented these thoughts to you to-day regarding the above agents in all sincerity, as I do not wish any one to be misled by special pleading for the use of a new drug when it does not promise to be the equal in value of our valued and tried remedies. There is no excuse for the use of any drug or remedy unless it promises to be the equal of or superior to those already in use.

PROCEEDINGS OF SOCIETIES.

INTERNATIONAL DENTAL FEDERATION: FIRST GENERAL MEETING, HELD AT CAMBRIDGE, ENG., AUGUST, 1901.

(Continued from page 1089.)

The President said that after the remarkable speech of Sir Michael Foster he could not hope to say much, because his knowledge of English was very limited. He was almost impelled to close his manuscript and sit down, as there appeared to be nothing more to say. He had come to the town of Cambridge and to its university not only to place himself under the instruction of great philosophers, but to feel the influence of the education which had been going on there for centuries. Sir Michael Foster had spoken and advised on a question which divides the dentists throughout the whole world, and Sir Michael had said what was to be said better than any one else had ever said it before. But, as he had prepared a speech, he supposed that he must say something, and he claimed their indulgence.

The President then delivered the following

INAUGURAL ADDRESS:

Mr. Chairman and Gentlemen.—Last year, the twelve hundred dentists who attended the Third International Dental Congress, which was held at the time of the Paris Exposition, decided to preserve the professional organization created in view of that Congress by organizing the International Dental Federation, with its Executive Council and an International Commission of Education. The dentists wanted to form a universal union of the nature of that formed several months afterward in the case of the *societes savantes* while waiting for the time when diplomats and governments should realize this union in all the branches of human activity, making the latter a compact entity. According to this decision, a meeting was held in Paris immediately after the Congress.

This year we have come to England to hold our second meeting. The welcome that has been tendered us, the prominent men that have taken part in our discussions, and the first results of our work show that the organization newly created by the Paris Congress supplies a necessity of our epoch, and that it will produce useful results for the advancement of the science of odontology. I have maintained that the meetings of the International Dental Federation attract the choice men of our profession. And indeed they are choice men—those who do not hesitate to leave their families, their occupations and their countries to discuss topics not of direct or immediate interest to them, but that constitute the problem of the educaion of their successors. Our *confreres* will certainly ratify the statements just made when they see the list of practitioners that have attended our meetings, representing sixteen of the most important countries ot Europe and America.

As far as our labors are concerned up to the present, they have consisted mainly of an exchange of ideas in view of organizing and devising a plan of work for our future meetings. The more complex and important a body is, the longer must be its period of organization.

The birth of the new element of professional progress took place last year in the midst of great ceremonies, and in the presence of the most authoritative representatives of the dental profession of the world, in a meeting presided over by one of the greatest *savants* of the University of Paris, Professor Gariel, the delegate of the government. It has been the desire of the Executive Council that the second meeting, which constitutes for our International Federation a sort of scientific baptism, should take place with the same ceremonials, and for this purpose it has requested the eminent vice-chancellor of the University of Cambridge to stand as its godfather.

The Executive Council has honored me with the delicate mission of indicating the purpose that we are working for. Pardon me, gentlemen, if I confess to a feeling of timidity in having to address so distinguished an audience, in view of the knowledge and talent properly required for such a task. I shall, however, endeavor to fill any lack in those two factors by contributing all the good will of which I am capable.

Our work is one in which we have to deal constantly with difficult problems. In the first place we have the diversity of languages; this, however, is an obstacle easily overcome. There is another one of greater magnitude, brought about by the character of the different countries in which we live, by the difference in the legal conditions of their organization, and especially in their degree of evolution—evolution which is in some slight degree the cause of our diversity of opinions. We must make great efforts and many mutual concessions in order to harmonize our national conceptions into the international plan which it is our wish should emanate from our discussions. A certain amount of work is also necessary, in order to set forth this program in such a way as to be understood and accepted by every one of us.

It seems to me that it is a daring act for me, the modest representative of a science as yet new, to stand here in this old university, before such distinguished professors, and talk to you on education,—that is, on one of the highest problems, even though it be limited to the training of young dental surgeons. Therefore, I have aimed to shelter my affirmations under the authority of men whose names and writings are highly valued in this connection. Two thoughts that I have borrowed from Michelet have encouraged me. One is that education is the first; the second, and the third part of politics—that is, its pure essence; and the other is that in an advanced society teaching ought to be the function of almost every one.

While working at the preparation of this paper, my mind was impressed with the importance—for the future of humanity—of an Anglo-French combination. And so I consulted alternately the French and English philosophers. I went from Michelet to Herbert Spencer or Stuart Mill, and from Roger Bacon to Descartes, in order to borrow from them the general principles which must guide us in the preparation of a national program of instruction in the midst of the contradictory ideas which are contending for the direction of public education. It has been through the inspiration of their principles that we are able to know the value of every science which is to be part of this program, and adopt a method of appreciation of their worth; and also in order to know the means of differentiating between studies having an intrinsic value and those having a merely conventional one, and between those that are valuable from the view-point of knowledge and those that are important from the standpoint of education and discipline.

We shall then understand better the difficulties of education in general, with the harm that can be done to the mind by the studies that may enter into the formation of a program or by the faulty order in which they are taught; also the necessity of proceeding from the concrete to the abstract rather than from the abstract to the concrete. It will be easier to understand the necessity of comparing these general principles of education with those that inspired the curricula of our schools, prepared empirically and according to the needs of the respective countries.

Among the general notions capable of directing us in our work, and that can be transformed into accurate proportions applicable to the teachings with which we are concerned, I will quote the following paragraph from the admirable work on Education by Herbert Spencer: "One of the conclusions at which we arrive is that in every branch of knowledge we must proceed from the empirical to the rational. A leading fact in human progress is that every science is evolved out of its corresponding art. It results from the necessity we are under, both individually and as a race, of reaching the abstract by way of the concrete; that there must be practice and an accruing experience, with its empirical generalizations, before there can be science. Science is organized knowledge, and before knowledge can be organized some of it must first be possessed. Every study, therefore, should have a purely experimental introduction, and only after an ample fund of observations has been accumulated should reasoning begin."

It is curious to observe that this proposition of the English philosopher can be easily applied to the organization of dental education, such as has been very well understood by the different nations, especially by the United States, England and France. In fact, in the English schools the apprenticeship of dental prosthesis precedes the special scientific and medical studies, which, in the evolution of the profession, is according to the historical evoluton indicated by Herbert Spencer, and according to the principle of the subordination of the abstract to the concrete. We will endeavor to inspire ourselves with the principles of those great thinkers who have studied education in general, that we may apply them to our particular branch of education, whose purpose is to form good odontologists.

It is not an indifferent question, for the State and for the people at large, that odontologists should receive a rational education in proportion with the progress of their special science—an education capable of developing their qualities to their maximum.

It is not necessary that I should say anything to you upon the utility of the dental system for the preservation of health. At an epoch not very remote from this good teeth were an indispensable requirement of the soldier, who, however, had to open cartridges with his teeth. Progress in the military art has caused the disappearance of this practice. The State should by no means, just for this reason, be indifferent concerning the organs under our supervision. The teeth are always necessary for the development of the child, as well as for the conservation of health in the adult. Dentistry should hence be in evidence in the school, in the army, and in all aggregations of human beings as an important part of hygiene.

Likewise, it seems unnecessary that I should call the attention of dentists to the importance, for his dignity and for the position that he should occupy in the State and in the public estimation, that he should receive a complete and rational education, which would permit him to render to his fellow-citizens all the services within his province. A good education for the dentist is for the State a question of public interest, as it is for the dentists themselves a question of professional advantage. This for a long time has been perfectly well comprehended by our *confrères,* as can be seen by the papers on these questions that were read at our last professional meetings.

From the foregoing, it can be seen that the international union that we are endeavoring to bring about is useful and desirable, but the obstacles to which I have already referred, obstacles with regard to the laws, customs, traditions, the routine, the prejudices of every country, are numerous. There are others inherent to the conditions of evolution of odontological science, and to which I shall refer only in brief. Odontological science, from the view-point of special science, is relatively a new one, at least it has been recognized as such only in recent times. Recent historical works show that in all refined communities, in Egypt, in Greece, in Rome, the dentist existed in remote times as a special practitioner.

At the beginning, when medicine was closely connected with the priesthood, the priest, and later on the physician, were able to treat the disorders of the teeth as well as those of the other organs of the body, but soon a different kind of treatment became necessary—the prosthetic or restorative one, involving a mechanical art with which the physician was not familiarized and to which he was not sympathetic, according to the expression used by Dr. Kirk. It is this prosthetic art that gave birth to the prosthetic dentist.

The evolution of odontological science has taken place not without a certain amount of antagonism between these two kinds of practitioners; the physician, on the one hand, occupying himself with the purely medical phase of the diseases of the mouth, and the specialist of dentistry of the prosthetic phase, being a simple artisan at first, becoming later on the surgeon-dentist, having added gradually to his technical training in order to reach that step—the study of the medical branches directly applicable to the needs of his *clientèle*.

As Dr. Kirk has very wisely said, it is he who can be looked upon as the departing-point in professional dental evolution in all countries. It is by him and for him that this evolution has taken place. It is for him that in 1700 special laws were framed in France; it is for him that later on, in 1726, Fauchard, the father of modern dentistry, wrote the first special and complete work on dentistry. It is for him that in 1838, in Baltimore, Harris and his friends founded the first dental school, separately from the schools of medicine, after an interesting declaration of independence, which can be considered with Fauchard's book as the *acte de naissance* and the scientific basis of odontological autonomy.

A certain number of dentists, holders of the medical degree, considering that medicine and dentistry should be indissolubly ligated, did not adapt themselves to the plan that dentistry should be taught and practiced as a specialty of medicine. And, as Dr. Kirk says, this opinion persists in spite of the success obtained by the dental schools in all the countries of the world, and also notwithstanding the fact that the separation between medicine and dentistry is becoming more accentuated from the standpoints of both education and practice. Some countries of Europe have followed this doctrine, and have arranged accordingly education and practice.

It is understood that according to whether one or the other principle is accepted, the solution differs as far as education is concerned. In fact, if odontology is considered as a simple medical specialty, as ophthalmology, laryngology, and gynecology, it suffices that the student should first conclude his medical education in a medical school, and then if he thought it necessary he would go for a few months to a dental school in order to familiarize himself with the technique of dentistry that he did not learn in the hospitals. In the second case the student enters, from the beginning, the dental school, where he completes his entire education, just as the student in pharmacy studies his profession in a school of pharmacy, with the addition, if necessary, of a few special courses at the school of medicine or at the hospital.

In order to cause the disappearance of the antagonism of these conceptions, and to dissipate the difficulties that they oppose to the progress of our teachings, it is necessary, according to Herbert Spencer, to bring to light the facts which have been accumulated in sixty years of teaching in the countries where dental education has been organized in an empirical manner; that is, according to the needs and necessities of the time. For this purpose, we have to make appeal to impartial statistics. This is the first part of the work of the International Commission of Education. This introductory work is important from the standpoint of the direction in which dental education should go, and also from that of the position that this teaching should occupy in the universities. But this question is not the only one that requires our attention; there are others, of secondary importance, it is true, but nevertheless questions which the representatives of both doctrines could discuss to advantage and agree upon. Among these we should include the problem of the necessary preliminary education for the dentist.

On this question we also see the reappearance of rivalries of the classical and scientific education with regard to the utility of the mechanical and preliminary professional education, such as is given in the United States in the manual training schools, in France in the École Diderot, as adopted by the Paris Congress, and such as we see it in London in the Institute of Technology as organized by our friend, Cunningham. We will also mention the question of the extent of the scientific programs, medical or technical, theoretical or practical.

In order to determine exactly the studies which should enter into the program, we must first of all determine the duration of these studies. It is evident that when the time shall come for the discussion of the quantity of medical sciences and of mechanical art that should compose the program of the future dental surgeon we will again find the partisans of the two opposite principles. But then one factor interposes itself like an arbitrator; I mean the duration of the course—the number of hours that could be reasonably consecrated to dentistry. "Had we time," says Herbert Spencer, "to master all subjects, we need not be particular." To quote the old song:

Could a man be secure
That his days would endure,
As of old, for a thousand long years,
What things might he know!
What deeds might he do!
And all without hurry or care.

But "we that have but span-long lives" must ever bear in mind our limited time for acquisition. It is superfluous to declare that we must limit ourselves to the useful, to the essential, to the indispensable. "It is not necessary," says Descartes, "that the honest man should have read all books, neither is it necessary that he should have learned everything that is taught in the schools. Moreover, it would mean a mistake in his education if he had consecrated too much time to the study of letters; there are many other things to be done in life." Hence the time that it is possible to devote to study will be coarbitrator with another factor—the number and nature of the operations which the dentist is called upon to perform at the present time in the branches of operative and prosthetic .dentistry and anesthesia.

Lastly, the results obtained in the different educational centers, with the different systems in vogue in America, England, France, Switzerland, Austria, Germany and Russia, will also enter in this account. This is why the active collaboration of the men of all countries is necessary. Then we will see that by placing ourselves on an international standpoint all our discussions will lose some of their acerbity and intensity, and we will get rid of the irritating questions which often refer to minor considerations—mere words or purely local designations—rather than to real division.

By elevating the discussion to a philosophical standard, we shall agree that odontology is a science which tends to the preservation of man; it is a biological science. Hence it is perfectly possible to conceive, according to Professor Eliot, president of Harvard University, recently quoted by Dr. Kirk, a new university where the teaching of biological sciences would be established on a broad basis, so that all students, according to the purpose of their studies in relation to the profession chosen—so that practitioners or savants, physicians or dentists, should be able to take up the fundamental knowledge which they would require while following the study of a specialty not taking up more than about four years, and to conclude by obtaining the final diploma of doctor in this specialty.

"Under such conditions dentistry," says Dr. Kirk, "would have a place in medical education or, better, in the university in proportion to the needs of its practice, and the antagonism to which we have referred would not exist."

But, no matter what the future reserved to this proposition is, in the meantime the discussions of the International Commission of Education will contribute to advance in our several countries the question of the position of the dental surgeon and of his education. We want to work for the benefit of our successors, and prepare the best program of intellectual, moral, and physical education. Besides, in this work there is a thought capable of giving us much satisfaction—the thought of love of humanity; and love, according to Auguste Comte, is the secret of human nature, the secret of the world.

We have applied to this work the principles of thinkers and of philosophers of whom humanity feels honored. By the welcome that has been tendered us we are assured of the support of the savants of this university. This is our encouragement, and also our reward.

This work is new; it will have to be developed by others, and, as stated by that great man who went through this university—Roger Bacon—"Many will pass and science will grow."

Sir Michael Foster: I am sure we have all listened with very great pleasure to the admirable address of our President, and did that great trouble, time, allow we might proceed to discuss some of the points that he has raised. But it is my duty—not only as deputy vice-chancellor, but as professor of physiology—to remind you that in a very short time you will be called upon to perform, according to your program, certain physiological operations in which the teeth play an important part. I think we shall be consulting our interests if we defer further discussion until this afternoon, and now gently wend our way to the Combination-room of Trinity College, where the vice-chancellor has provided for you something to eat.

LUNCHEON.

At the invitation of the vice-chancellor of the university and with the kind consent of the fellows of Trinity College, the delegates were entertained at luncheon in the Fellows' Combination-room, Trinity College. Sir Michael Foster again presided, and, with the Regius Professor of Medicine and Dr. Cunningham as "croupiers," at the conclusion of the luncheon said:

The autocrat of all the dentists, Cunningham, has issued a decree that there shall be no speeches at this luncheon. I understand you are going to have as many as you want this evening at the banquet, but we are to have none here. Still I think you would like me to convey on your behalf some words to the person who is the real vice-chancellor of this university. I am only for the time being the deputy vice-chancellor; the real vice-chancellor I hope is fishing in Scotland, recruiting his health, which has been impaired by his many labors during the session. But I may say that I will convey to him on the part of you all your best thanks for the opportunity you have had in meeting in this old university, and also—may I add?—for the excellent repast, which I am sure he ordered in fear and trembling, knowing how severe critics you dentists were in everything that concerns the mouth.

At the instance of Dr. Godon, the healths of the vice-chancellor and of Sir Michael Foster were drunk with acclamation, Dr. Godon remarking that the Federation had never been, and never would be, better treated than it had been that day.

CONFERENCE.

In the afternoon a conference was held in the Trinity College Hall, over which Sir Michael Foster presided.

The following address on "Dental Education" was read by Dr. Joseph Griffiths (University Reader in Surgery):

Sir Michael Foster and gentlemen: I feel this is an occasion for introducing what I am about to say with apologies, because neither am I a dentist nor indeed do I know, except in very general terms, anything of the education of a dentist. But, as I have been asked to speak upon the subject now under consideration, I beg you will grant me that indulgence which you, tried by meetings and speeches during the last week, must be pretty well accustomed to exercise, and which I trust you will freely bestow upon me and the matter of my remarks. As, however, I represent the sister art of surgery in this university, and am engaged in the teaching of the art, as well as the science upon which the art is built up, I may be allowed to have a small say in the matter of the education of the dentist. This subject is not new to me, thanks to Dr. Cunningham, who has on many occasions brought it before me for discussion on the main principles which should guide in the bringing up of the dentist. As I have said above, I know nothing of the work of the dentist except in a general sort of way, which I gather on the occasions when I seek his advice and aid, and all I can hope to bring to the discussion of this interesting subject is the *point of view* of the surgeon, who is in one sense the father of the dentist, he being even now capable by law of undertaking if he chooses the practice of dentistry.

Now, I believe I am correct in making the following statement—that the dentists are divided among themselves as to the best means to adopt whereby they themselves can be best educated; and, broadly speaking, they are divided into two sections. To both sections, however, the desire to produce the best dentist is common, and each section naturally thinks it has found the right way. So far as I am able to gather and understand, this difference between the two sections may be expressed in the following manner: One section desires that every dentist shall be trained as a medical man is, and then take up dentistry; whereas the other section desires that a dentist shall be trained to his own profession from first to last. (Before we proceed any further, I think it would be well for me to state that all I am about to say applies to the average, and not to the exceptional dentist.) To emphasize this proposition, let us put it thus: One section desires dentists to be qualified medical men who have, as it were, taken up dentistry as an afterthought, and the other wishes for a dentist from start to finish. According to the former, the man would be given a general medical education, and it can be estimated at nothing more, to base his future practice of dentistry upon; where as according to the latter he would be given an education upon which his future work directly depends.

Is the education of a dentist to be that of a medical man with dentistry added on, or is it to be designed to meet his own requirements? is the question of the hour.

To help the solution of this interesting problem, a brief comparison between the training of the medical man and of the dentist may not be out of place. In the case of a medical man the first half of his educational career is spent in gaining a complete knowledge of the normal man, and he takes biology, chemistry, and physics as introductory subjects to anatomy and physiology. This is done in order to give him a better understanding of the structure of the body in detail and of the functions of its several organs and tissues. The second half is spent in acquiring all that is known of morbid changes and abnormal functions, and in a training in the physical examination of any and every part of the human frame. In the earlier half, then, he is trained in methods adopted in the different subjects for eliciting knowledge, and in the second he is directed to employ the methods with which he is already familiar to determine as far as possible the physical condition of any or every part of the body.

On the other hand, in the case of the dentist the first period is spent in acquiring knowledge of the nature and of the mechanical properties of certain materials and in the training to perform accurate work, which must be done, so I understand, to a nicety—a training similar to that of a mechanician. In the second period he is directed to acquire a general knowledge of the structure of the body and of the functions of its several parts; a minute acquaintance with the teeth and the jaws, and of the diseases they are liable to; with the application of the methods, already familiar to him, of dealing with the teeth in their morbid states.

Such I believe to be a fair general statement regarding the training at the present time of a medical man and of a dentist. Let us contrast the requirements of these two. The medical man requires a knowledge of the minute structure and of the functions of the whole body, but the dentist only a knowledge of the minute structure of the teeth and of the jaws, and a general idea of the rest of the human frame. A medical man requires only a general, but sound, idea of mechanical work, but the dentist a thorough knowledge of it, so that he may be able to perform his work with accuracy. A medical man requires a detailed knowledge of all diseased processes and their known causes, but the dentist a particular knowledge of morbid processes as seen in the teeth and jaws, and only a general idea of the morbid processes observed in the remainder of the body. Such a review brings out pretty clearly that the educational career of a medical man does not coincide with that of the dentist except in a few particulars.

Even in anatomy and physiology, in which their work comes nearest together, the dental student requires that which will give him a sound understanding of the teeth and their connection with, and relation to the remainder of the body, whereas the medical student should be familiar with the whole body. Of course, the more a dentist knows of the human body or of any other kindred subject the better he will be equipped generally, but not necessarily better furnished for the work of his own profession.

And if we go further and compare the surgeon with the dentist, we shall find that their work differs in a material degree. The dentist must possess many of the qualities that go to make a surgeon; he should have a quick perception, a keen insight, a sensitive touch, and be ever ready to act. But the skill of the dentist is largely, if not entirely, the result of that training in the mechanical department, so to speak, whereas the skill of the surgeon depends less upon mechanical training than upon accurate judgment to do enough and no more—for in hardly any operation is it necessary for him to make a physicist's measurements and to adhere to them. Mechanical training has indeed been neglected in the education of a surgeon, and hence it is that we often deplore the mechanical knowledge and the reasoning built upon its deficiency as displayed even by surgeons of repute. This has been neglected, I imagine, because that skill born of judgment has been estimated so highly. Now, with the dentist it is just the reverse, for who can conceive a dentist who is ignorant of mechanical work?—but one without judgment may perhaps be occasionally met with. Thus the surgeon is at one end of the scale and the dentist is at the other, and doubtless it would be a good thing to improve them both, but in contrary directions.

Enough has, I hope, been said to point out that to make a dentist his training should be so arranged as to bring out his fitness for the work before him. A mechanical training of the best kind is essential to him, and must form the basis of his future work. In addition he requires a knowledge of the minute structure and of the function of the teeth, the material upon which he will have to bring his best mechanical skill to bear. I would therefore strongly urge you not to imitate the education of a medical student, but to continue on the lines which will train a dentist for his own profession from first to last, and to have a single purpose in view and to endeavor to obtain a definite result. Do not try to make a medical man a dentist, but let a dentist start and finish as such.

Can this education of a dentist be carried on side by side with that of the medical men? is the question of practical importance. I would unhesitatingly answer, no. The anatomist may train either, but he cannot train both together without giving one much more than he requires and not paying enough attention to the other. It is much the same with physiology. Therefore, I say their courses should be separate, and so arranged as to serve the right end. In physics and chemistry the same training might serve; in study of diseases, no.

Is such a course of study proper for a university to undertake? In my humble opinion, it is and should be, for the work of the dentist is as honorable and as worthy of respect as that of any of the older professions, and I trust that the newer universities will take this line and have an avenue for dental students to obtain a university degree side by side with the medical student. But I also trust the authorities will let dentistry and medicine be free to develop along those lines which each finds best suited for its own progress.

Although dentistry was once an intimate part of the medical art, it can hardly be so again, for its evolution has been so complete that it now forms a distinct and separate division of the art of healing. It is, I venture to think, a child of the old stock destined to continue an independent existence and to work out its own salvation.

At the conclusion of the address, and before the opening of the discussion, Mr. W. B. Paterson, the honorary secretary of the British Dental Association, entered the room, and was heartily welcomed by Sir Michael Foster.

DR. BROPHY, Chicago, said that years ago he held views quite contrary to those he held to-day, but in the light of advancing education and the development of dentistry he had been forced to accept ideas that were formerly not agreeable to him. In the United States dentistry had its birth as a separate and distinct school of training; it was not from choice, but because the medical profession refused to give dentistry a place in their curriculum. At that time it was regretted, because it was wished that dentistry should be a part of the parent medical profession. But, independent schools having been founded, such branches of medicine were taught as the founders felt were necessary. The schools had now added, from time to time, departments until one who was not acquainted with all the medical curriculum might readily be led to believe that they were schools of medicine. It was recognized that in Europe the conditions were quite different from those in America. It was felt that it was impossible to make changes in this country, and in many instances it was quite impossible to make changes in America. The question, therefore, was how to prepare a man to do his work. He had the pleasure of sitting by the side of Sir Michael Foster at luncheon, and he put to him the question. He had a boy nineteen years of age just ready to enter the university; should he be prepared by a long four years' course in the university and then entered at the school of medicine for another four years' course or not? The answer was, "I would prepare him for his life's work. A student of medicine should devote his attention to the study of physics and chemistry and languages." Had he learned nothing more in his trip to Europe, he would have been fully compensated by that answer. He quite agreed with every word contained in the paper. The man who started out in life to prepare himself for any particular calling must have in mind that calling from the beginning to the end.

Dr. Sims Woodhead (professor of pathology, Cambridge) said that every man preparing for his life's work underwent a certain amount of general training, a training to fit him for the specific work he had to undertake later; and he could not help thinking that perhaps the preliminary years of the dental student and medical student might at any rate run on certain parallel lines. An attempt was made, how far successfully it was difficult to say, in the subject he had to deal with to give the medical student, as soon as he came from his study of anatomy and physiology, some inkling of the general processes of disease. The student specialized in the direction of special pathology, diseases of the nervous system, diseases of the kidney, and so on; but before he took this up it was absolutely necessary he should have a good solid foundation of the general processes of disease. That being the case, he could not help thinking it might be somewhat dangerous to begin to specialize at too early a stage and whether it would not be better to study at any rate the general physiological and pathological processes, in order that in studying the disease of the special parts to which attention was to be devoted one might go to the very foundation straight away. From that point of view, he put in a plea for some common ground in the earlier part of the dentist's professional life. He recognized how much dental surgeons had contributed to the subject of bacteriology. In fact, the earliest experiments in bacteriology were carried out on material taken from the teeth. He quite agreed with dentists specializing in the later stages of their course and not attempting to be medical men or surgeons, because they wished to treat a patient for special diseases of special organs, and it was their duty to know far more about those than any medical man or surgeon possibly could know. Dentists were experts, and therefore required an expert training. Even the surgeon found it necessary to specialize, and anything outside his own work he handed over to a colleague. In that light he hoped no attempt would be made to make the dental qualification a medical qualification, but that it would be made something far better for the purpose than any medical or surgical qualification. The dental surgeon was a man specializing in a certain direction, who had built up his profession on a good, sound foundation of general physiological and pathological knowledge.

Professor Hesse, Leipzig, considered that the preparation for the dental profession was so different in different countries that it was almost impossible to fix a rule or a standard for the preparation in all countries. It was necessary to be guided by the point in view—namely, the development of the art or profession which it was intended to practice, and the training should be such as was best fitted to secure that end.

Dr. Aguilar, Madrid, said he was deeply interested in the proceedings of the Federation, because he was the first to feel the necessity of such deliberations. It was only a few months ago that in Spain the law for establishing a dental department in the University of Madrid was passed. Prior to that, there was no dental teaching, except what was given privately. He had the honor of being appointed to the chair of dentology in the University of Madrid, and when he was called upon to propose the curriculum of studies he felt the necessity of learning the opinion of learned men—and that opinion could not be better gained than through the Federation now assembled in Cambridge. He felt himself fully compensated and over-compensated for the trouble of attending the meeting. He had no authority to express an opinion of his own, and he would only place in the hands of the chairman the following proposition:

"That five members be appointed to propose resolutions on the following questions and report at the next meeting:

"(1) What preliminary studies should be required for the admittance of students into the dental colleges?

"(2) What are the technical, theoretical and manual studies the student should pass through before being allowed to practice dentistry?

"(3) What part of the studies taught in the medical colleges should be followed by dental students?

"(4) What are the most reasonable titles to be applied to the persons who practice the therapeutic and prosthetic treatment of the diseases of the teeth and mouth?"

On the motion of Dr. George Cunningham, seconded by Dr. Brophy, the resolutions were referred to the Committee of Education, with full power to act.

Dr. Kirk: It was said some years ago by a gentleman who resided not so many miles from this spot that the "evil that men do lives after them; the good is oft interred with their bones." But in what has taken place at this conference it seems to me we have at least one instance where the reverse of that proposition is true. If I have been able to correctly interpret the *motif* of the eloquent and scholarly address by Sir Michael Foster, to which we all listened with such deep interest, I feel that I do him no injustice when I recognize in it the practical application of the principles set forth by Mr. Herbert Spencer in his epoch-making essay on Education; or when I further recognize in it the spirit which animated the life-work of that man who, more than all others, I regard as the Nestor of dental education in England, Sir John Tomes.

I was told before I left America, and even since my arrival in England, that it would be quite useless to expect that anything which might be done as a result of the conferences of the Federation would have any effect in modifying existing views on the subject of dental education in Great Britain; and yet here in England there has been given out by one of her recognized educational authorities, and from one of her greatest universities, a statement of the principles of dental professional education the most liberal, logical, and reasonable which, in my judgment, has yet been uttered anywhere.

Like Mr. Spencer, Sir Michael Foster in his address recognizes the utilitarian character of professional knowledge and the inevitable conclusion therefrom, that education should, from the beginning, be adapted to the uses which the knowledge thereby attained is intended to subserve. He has, by keeping that central idea in view, cut the Gordian knot which for years has confused our discussions and thought on the relationship of dentistry to medicine. His statement that the dentist, within the limits of his activities, is a "healer," places the dental practitioner upon the basis of a natural classification much more readily understandable than when he is regarded, either positively or negatively, as a medical specialist, for, lacking as we do an adequate definition of medicine, it is not yet possible to decide whether a dentist is a medical specialist or not.

The enthusiasm and unanimity of appreciation with which the address of Sir Michael Foster has been received clearly indicate the general acceptance which this representative international gathering has accorded to the views he has expressed. So evidently is that the case that it seems to me the further deliberations of this body may be most profitably confined to a study of the dental curriculum, or, in other words, to securing an arrangement of professional study in conformity with the principles set forth in the address, best suited to the education of the dentist. The best attainable curriculum is yet to be devised; the very fact that such marked differences are to be found in the curricula of dental colleges throughout the world is self-evident proof of the need for further investigation of the best methods for making dentists. It would simplify the question greatly if we should arrange all of the subjects now taught in all dental colleges into two categories: First, those which are essential, and, second, those which, though not essential, are desirable in the education of the dentist. We would then be in position, after having formulated a minimum essential curriculum, to provide for its continued expansion and improvement by the gradual inclusion of members of the category of desirables into that of the essentials.

Reference has been made to the importance of manual training as a feature of the dental curriculum, in order that there may be given to the student that high degree of manipulative dexterity without which he is unable to achieve success as a dental operator. We all admit the importance of manual training in dental education, but not all dental educators have clearly recognized an equally important consideration in that connection—namely, the stage of development at which manual training should be undertaken by the student. I am not a physiologist, and I am glad to be in position to submit to the judgment of the distinguished physiologist, as well as educator, who is our presiding officer to-day whether it is not true that in order to successfully train the hand to a high degree of dexterity the manual education must be undertaken early in life, for a period quickly arrives in later years where such training becomes impossible. It was that fact which was clearly recognized by Sir

John Tomes, and which he so energetically and practically advocated in his efforts at dental educational reform in this country.

We have frequent and familiar examples of an analogous state of affairs in connection with the use of the bicycle. It is quite possible for an individual after attaining adult years to learn to ride the wheel, but the later it is put off the more certainly does the unfortunate rider develop that anxious expression of countenance which in America we call the "bicycle face." The learner may in time know how to propel his machine, but in so doing he acquires infinitely more knowledge about every feature of the topography of the roadbed over which he travels, and never acquires that freedom and abandon begotten of the automatic muscular coördination with which the street urchin of a dozen years controls his machine. It is the necessity for manual training for the dental student in an early period of his career, when his muscular and nervous receptivities are at their maximum, that we find, in my judgment, the strongest argument in favor of a special curriculum for the dental student, and a sufficient reason why his special education should not be deferred until after he has pursued a standard course of medical training.

Professor Griffiths has referred to the importance of including the study of bacteriology in the dental curriculum. I know of no better illustration of the practical utility of a knowledge of bacteriology to the operative dentist than that embodied in the statement recently made by Dr. Black, of Chicago, in which he said, with reference to the preparation of cavities in teeth preparatory to inserting fillings, that "the margins of all cavities should be laid down upon areas of tooth-structure which are relatively immune to the attacks of the bacteria which cause dental caries, in order to prevent a recurrence of the disease."

If that axiom be true, and I think that no one can successfully question its accuracy, the evident conclusion must be that no man can intelligently and successfully prepare a carious cavity in a tooth for filling except he be fortified by a fair knowledge of bacteriology. I feel that we may congratulate ourselves as dental teachers and practitioners upon our good fortune in securing the encouraging and far-sighted statement of dental educational principles embodied in the able address of our distinguished chairman and of those who have followed him.

Sir Michael Foster said, in answer to Dr. Kirk's inquiry, that for many years past he had urged that the education of the surgeon should not be delayed too long, because it was impossible after certain years to acquire that suppleness and dexterity of touch which was necessary for success. The mind grew old very slowly, and could be educated even late in life; but the body became old very soon, and it was necessary to train it while it was really young.

Dr. ROSENTHAL, Brussels, said that the evident conclusion of this conference was that nearly every one was of the same opinion, and he thought that Sir Michael Foster had said that morning nearly all that could be said on the matter. He proposed that Sir Michael's speech should be translated into all languages and sent to all the bodies in the world interested in the matter. In Belgium there was a movement toward putting dental education into the hands of the medical man, but the basis upon which such a resolution was taken was a monetary basis. The medical profession was so overcrowded that they thought specialization in dentistry would prove remunerative and relieve the overcrowding of their profession.

SIR JAMES CRICHTON BROWNE was glad to have the opportunity of paying his tribute of admiration to the excellent address delivered that morning—an address instinct with wit and wisdom, adorned by epigrams and similes, which would not be easily forgotten. Sir Michael Foster referred to the early training of the dentist at the bench, and the subject had been further emphasized by the excellent observations of Dr. Kirk. Speaking from his own point of view, he attached great value and importance to the manual education of the dentist, and was inclined to attribute to that education a utility and significance that are not perhaps always generally recognized. Every surgeon knew that the movements of the hand were initiated in a certain group of centers of the middle region of the brain—motor centers of the brain. But they were motor centers only in a special sense. They were not motor simply in the sense of sending forth impulses in response to excitations from without; they were motor in the sense of being the springs of movement, and they were receptacles in which was chronicled all the knowledge which the muscular operations put the man in possession of. The muscles not only obeyed the commands of the will, but they added infinitely to the information and intellectual acquisitions. The most cursory analysis of ideas revealed the fact that there were very few of them which were known purely by sensory impressions. The motor centers of the brain took an enormous share in mental life, and mental manifestations would be as impossible without them as would be the circulation of the blood without one ventricle of the heart. The highest possible functional activity of the motor centers was as important with a view to mental power as to muscular expertness, and the motor centers for the hand were very prominent among the motor centers of the brain. They were related to an organ which in its enormous combination of movements largely added to our intellectual resources, and it was evident that the highest possible functions of activity of those centers was of value in adding to intellectual grasp as well as adding to the expertness of the hand and to business success. But in order to have the highest possible functional activity of those centers it was necessary to have them trained betimes, and therefore it was necessary to give the student his manual training in dexterity very early in life; and by doing that one was not merely training the hand, but was helping to expand and develop the intellect.

Dr. George Cunningham thought the members would appreciate the results of the first general assembly in connection with the Federation, and he thought the discussion on education was a record which would be hard to beat. The Council had been authorized to appoint a Committee on Education, and he proposed, as a tribute to the success that had been met with that day, that the members should do something to promote the practical education of the public in dentistry. He proposed the appointment of a Committee on State Dental Service. It had been said at a meeting of the representative board of the British Dental Association by a veteran whom he admired and respected for his past work, that he did not know what State dentistry was, and that he hated the word. State dentistry meant the utilization of the dentist's services by the State. The question of dentistry in the army never was settled. A war in Cuba was necessary to produce what was recommended before the war—dentists for the army of the United States. Before the Boer war began there were dentists who, as patriots, thought their best place and their greatest assistance was in utilizing their services for the State, but their services were rejected. Four dentists had been sent out to the front to look after nearly a quarter of a million men—very capable dentists, but without much experience. What were those few among so many? Their services would be lost, and the danger would occur that instead of giving the men the benefits of conservative dentistry there would be a greater utilization of the forceps, which to some had ceased to be a dental instrument at all. He would not be content with the dental services accorded to the army at the present moment by the

War Department as long as the dentists were made servitors—unless there was a superior mind of a dental character to guide the work. He therefore proposed the formation of a committee to take up the subject.

The proposition was seconded by Dr. Godon.

DR. J. LEON WILLIAMS thought the greatest work which the Federation could do was not so much to educate the dentists as to educate the public. He therefore asked the Federation to keep in view two things—first, the harmonizing of dental teaching, which meant to keep in very close touch with the most advanced scientific investigation. There must be always a divergence of opinion of all arts—that was one of the conditions of progress—but he felt there might be much more harmony in the application of scientific principles. A patient might go to one dentist who recommended a certain method of procedure, but if that patient went to another country, or to some one else for the same thing, a totally different course was recommended. In the advanced stage of scientific dentistry that was not necessary, and therefore he thought a part of the work of the Federation should be keeping in the closest possible touch with the great scientific questions and the harmonizing of their views. Perhaps even more important than that was an attempt to reach the public in some way. There had been a great international congress held in London on tuberculosis, and there was hardly an opinion held by advanced authority on that subject which had not been expressed. Medicine and surgery were in very much closer touch with the public than dentistry, and that closeness of touch was brought about very largely through the daily press, a thing which dentistry as a profession had almost neglected. There was a most woful amount of ignorance on the part of the public as to the possibilities of modern dentistry, and that was because the public was not in close touch with the dental profession and because the dental profession had not done its duty in educating the public in modern dentistry.

DR. FÖRBERG, Stockholm, as the hour was late, proposed that the subject should be discussed at the meeting to be held next year in Stockholm. He said he had taken the opportunity to give the general secretary the invitation for the Federation to meet in Stockholm, and he was also authorized to extend the invitation to the Executive Committee of the American Dental Society and the dental societies of Europe. Stockholm would do its best to welcome the Federation, but after the grand reception it had received in Cambridge he was afraid the best would be exceedingly difficult.

Sir Michael Foster said the proposition of Dr. Förberg would be considered by the Council.

A vote of thanks was carried with acclamation to Sir Michael Foster, and the conference concluded.

After the conference in the afternoon a garden party was held at Merton Hall, at which a demonstration of long-off was given by Dr. Cunningham, Prof. Sims Woodhead, and others, and the interval before the banquet was spent in an exceedingly pleasant manner.

THE BANQUET.

A banquet was given to the delegates in the evening at Downing College. Sir Michael Foster again occupied the chair.

The loyal toast of "The King" having been duly honored, Sir Michael Foster explained that he held in his hand a sheaf of letters and telegrams from gentlemen regretting their absence, among them being Lord Rosebery, the Home Secretary, and Lord Alverstone.

Dr. Brophy said that at the conclusion of the address delivered that morning his heart was filled with pleasure and on listening to the other addresses it began really to overflow with joy. At the close of the afternoon he had found addressed to him a telegram to the following effect:

"Dr. Brophy, care Dr. Cunningham, Cambridge: Greetings from the Faculties Association of the United States to the 'Fédération Dentaire Internationale.' Notify the Federation that the Faculties of the United States have adopted the four years' course of instruction. To the 'Fédération Dentaire Internationale' we send greetings.—Kennerly, Secretary of the Association."

The toast of the "Fédération Dentaire Internationale" was proposed by Sir Michael Foster, who said he was ashamed to confess that within a very brief period he did not know that such an important Federation existed. He gathered from the proceedings that day that the Federation came into existence only a year ago, and he supposed it had not yet cut all its teeth. But he felt sure from what he had seen that its teeth were absolutely perfect and needed no interference of any kind—perfect enamel, perfect dentin, perfect cement, absolutely free from all microörganisms, and, as far as he could see, it would never need the benefit of the dentist's art of caps and bridges, and things of that kind. For many reasons, he had full sympathy with the Federation. In the first place it had been his duty and his pleasure for many years past to take part in efforts toward international coöperation. He supposed he was a patriot and they were all patriots. He believed, as he was bound to believe, that an Englishman was God's best creation, and he had no doubt that on the other side of the water it was thought at a later period the Almighty improved his first attempt when he made the Americans. It was for the advantage of the normal man that each type should work in concert together. There was plenty to separate nations. There were things of which the Americans did not know much, called newspapers—newspapers which flourished by telling lies and sowing discord. Science, whatever was its branch, brought man to man and told him that he was his brother. Science alone could bring about that dream of the poet Tennyson, who spoke of the "battle-flag being furled in the parliament of Man, the federation of the world." The Fédération Dentaire Internationale was one of the great means of the accomplishment of that possibly as yet far-off millennium. Then he had a personal interest in the matter. He, too, had, or had had, teeth, and he rejoiced in all improvements of the dentist's art; and he felt sure that the Federation would bring about improvements in the manipulation of the masticatory apparatus even greater than those which had already taken place. And if he did not live to have his dentures put even in a condition more satisfactory than the satisfactory condition in which they had been for many years past, since he had been under the hands of a member of the Federation, he trusted at least that his children would profit by the increase in the art. He associated with the toast the name of a gentleman whom he hoped now he might call his friend, although he had seen him for the first time that day, M. Godon.

Dr. Godon replied, expressing his belief that the Federation was not only for the benefit of the profession, but for the benefit of humanity at large. He spoke of the great debt of gratitude which the Federation felt toward Sir Michael Foster and the English representatives for their splendid reception in Cambridge.

The "University of Cambridge" was proposed by Dr. Harlan, who said he felt that one of the things little dreamed of when the First International Dental Congress was projected was beginning to be realized. Before 1889, there was a small party in France, in the United States, and in Great Britain desirous of inaugurating dental congresses, and when the first little congress was held in Paris, in 1889, with three or four hundred members, representing eight or ten countries, it was felt that the small beginning might lead to something of great benefit to the world and humanity. The Second Congress was held in the United States, and last year, in 1900, the Third Congress assembled in Paris; and among the many things that the members of that Congress did was the creation of the "Féderation Dentaire Internationale."

Prof. Sims Woodhead responded to the toast. He characterized the University of Cambridge as a very liberal university, receiving with open arms all those whom it thought worthy of a good reception; and he was sure the members of the Federation had been very heartily received and welcomed most warmly. The Federation, he thought, had done very great things already—among others, it had drawn an address from Sir Michael Foster. It had bridged over the interval between nations, and it brought men to work together in scientific and friendly relations, and it had instituted work which should lead ultimately to a very great advancement in dentistry.

Dr. Hesse, in proposing the health of the British Dental Association, thanked the association for the hospitality shown to foreign visitors who had attended its meetings, and coupled with the toast the name of Mr. W. B. Paterson.

Mr. W. B. Paterson replied to the toast, which he said he was sure the British Dental Association would take as a great compliment.

Dr. Haderup, in proposing the health of Dr. George Cunningham, expressed his intense joy at being in Cambridge and his thankfulness for the very splendid reception which the Federation had received. At present, he considered one name was inseparably connected with the University of Cambridge, the name of George Cunningham, whose jubilee the foreign delegates had an opportunity of celebrating that evening. George Cunningham was regarded as the pioneer in the profession, an international pioneer —indeed, a true dental globe-trotter. His influence was felt everywhere, and not least in Denmark. As a motto for George Cunningham, he would wish to suggest, "One thing at a time." That might sound a little contradictory, knowing how many different ideas had come from the brain of their friend, but he would call to recollection a little English poem which said:

> Work while you work, play while you play,
> That is the way to be cheerful and gay;
> Whatever you do, do with your might;
> Things done by halves are never done right.

He thought those lines might be applied to their cheerful and courageous George Cunningham. In the name of the Dental Society of Copenhagen he presented a little jubilee paper to Dr. Cunningham which was especially interesting, and he finished by felicitating him on the fulfillment of one of his dearest dreams, the International Dental Federation.

Sir James Crichton Browne supported the toast. He said he noted with great interest that day in Cambridge the representatives of many different nations showing their teeth to each other, but with no menacing intention. He could not doubt but that the conferences and congresses now so often held by men of diverse race and owning different allegiance strengthened the bonds of nations. They removed misconceptions, established understandings, and spun those little threads of personal attachment which when twined together formed strong cables of international friendships. The foreign dentists, he hoped, would go home convinced that the English were not distinguished by that long, fierce, wolfish development of the canine teeth which, according to a number of editors throughout the nations of Europe, at the present time were supposed to be characteristic. He thought it fortunate that the first meeting of the Federation was held in Cambridge, under the wings of a great English university, where for centuries the love of learning had been fostered. Dentistry, notwithstanding all that had been said, was best founded on a liberal education, and it should be pursued not exclusively as a bread-winning occupation, but with more scientific interest. In this country, and he supposed it was so in other countries, dentists had been diligently striving to free themselves from unworthy associations, to perfect their skill, and to enlarge their knowledge, and he thought the time had come when the universities ought to take some notice of the efforts and recognize the legitimate aspirations of the dentists. There was no incompatibility between the most general, catholic culture and technical specialization; one was the best preparation for the other. The new University of Birmingham had determined to confer dental degrees, and no doubt other universities would follow in its train. It had struck him as interesting that there were seventeen colleges in Cambridge and seventeen different countries were represented at the Congress. With the toast, he submitted the name of Dr. George Cunningham. He did not know what part Dr. Cunningham had had in the formation of the Federation, but he was certain he had a finger in the pie. and also certain that he had stuck that finger in pretty deeply indeed. Dr. Cunningham was a friend of his of twenty-five years' standing, and during all that long period he had recognized his immense and uncontrollable vivacity; and, as psychological physician, if he wanted any moral treatment for any patients of his laboring under melancholia he would put them for a short time under the treatment of George Cunningham. He had his attention drawn to a document of so cryptic a character that he could not understand it: "To George Cunningham on his jubilee, 20th June, and to the fulfillment of a dream of the 7th or 8th August." He had not the slightest conception of what it meant, but he had been told to direct attention to it, and he had no doubt the explanation would be forthcoming from Dr. Cunningham, whose health he asked the members to drink with the utmost enthusiasm.

The toast was drunk with acclamation.

Dr. George Cunningham, in responding, said there was a world of potentiality in the presence of "Michael Foster," and he was glad to have the opportunity of expressing to him his best thanks for what he had done that day, not only for the dental profession, but for the benefit of humanity. It was his desire to work for the benefit of his profession and humanity all over the world, and he cared not what the color of the flag might be. Although born a Scotchman, he was an internationalist. The result of his long experience had given him something like a sense of proportion, a thing which was of the utmost value to a dentist. The dentists were now going to combine, not for the interest of men who had their little bits of cloth which they desired to cut for their own purposes, but to combine solidly for the welfare and benefit of humanity. He had not the faintest consciousness of what he was doing when he went to see his good friends the Danes, but the Federation was the outcome of it, and he thought, far from being the fulfillment of the dream, it was only the dream just commencing. (Dr. Cunningham concluded his speech by running up a miniature Swedish flag, which he stated was to be the flag for next year at any rate, and sat down amidst an overwhelming outburst of applause.)

Dr. Sauvez, speaking in French, proposed the health of Sir Michael Foster, thanking him for the manner in which he had presided over the various proceedings of the day, especially for his address of the morning, which he characterized as an epoch-making one.

Sir Michael Foster, before responding, read a telegram from Professor McAlister asking Dr. Cunningham to accept his hearty congratulations on his jubilee. There was another telegram from somebody at Peterboro, a great friend of Dr. Cunningham, regretting his inability to be present, and hearty felicitations from Professor Arkövy, of Buda-Pesth. There was another one from the Swedish Dentists' Society, sending their heartiest remembrances to the "champion of our front rank" on his jubilee day. There was also one from Paton, of Cologne, expressing the same sentiments.

Continuing, Sir Michael asked what he should say in reply to the toast. Around his little house, not far away, there was a garden, and in the garden there was a well. There had not been much rain for many weeks, and the gardener had been pumping at the well, but now the well was dry. The Federation had been pumping him all day long, and he was now quite dry. Dr. Sauvez had rained upon him many kind words, and those kind words would sink and perhaps later on descend and fill the well, but not that evening. He should always look back not only with pleasure, but with pride, to the part he had taken in that day's proceedings.

THE BI-STATE DENTAL MEETING.

Reported by R. C. Brophy, M. D., D. D. S. Chicago, Ill.

The story of the invitation of Joseph to the Children of Israel to visit the land of Goshen so familiar to all informed of biblical history, and consequently well known to all dentists, was recalled to the large number of practitioners who assembled in the fair little city of Goshen, Ind., on Sept. 25 and 26, in attendance upon the Bi-State Dental Convention, or the joint meeting of the Northern Indiana and Southwestern Michigan societies.

While the visitors to this land of Goshen did not take possession of everything they saw, they did not allow restriction in this direction to conflict with their having a good time. The programme was not so extensive as to call for strenuousness of action, and time was plentiful for social intercourse, inspection of the extensive display of dental merchandise and joining in the frolics of the war-call of the profession in Michigan, Dr. T. G. Rix, of Dowagiac.

The Convention was called to order by Dr. W. O. Vallette, of Goshen, President of the Northern Indiana Society, and after invocation had been rendered, Mayor Deahle, of Goshen, was introduced and delivered a particularly eloquent address of welcome. Dr. A. C. Runyan, of South Haven, Mich., responding for the Convention.

The address of President Vallette dealt largely with the matter of professional commingling and unity, as exemplified in joint meetings of different societies; the social pleasures and educational advancement resultant from fraternization and exchange of ideas entering largely into his discussion.

A paper was read by Dr. E. L. Clifford, of Chicago, entitled "The Limit of Dental Therapeutics." By way of introduction the essayist made use of the following sentiments: "Only a sudden and actual transfer in full maturity of faculty from one life to the other could give a really vivid sense of the differences of conditions now and in the early years of the past century. Perhaps the nearest approach to a realization of the change referred to might be obtained by picturing, in our thoughts, the consequences of sweeping into oblivion all the inventions and discoveries—scientific, educational, moral, political, industrial and social achievements of the past century. Knowledge has marvelously increased; almost all sciences are developments of recent years, in fact, the whole body of modern science, except pure mathematics and the rudiments of astronomy, physics and chemistry is the creation of the 19th century."

Comparing the therapeutical practice in dentistry with the scope of such practice in the past the essayist said:

"In the early years of our specialty, practitioners, though in somewhat of a crude state sometimes, performed almost all of the operations, and utilized almost all of the topical applications, though ignorant of our present theories, that the modern dentist of to-day applies. Later knowledge has increased our success, has improved our methods and increased our facilities, but has not enlarged our scope or field of practice, which it is well claimed by some stands to-day where it stood forty years ago; shall we always tread the beaten path?" As an advocate of more extended therapeutical knowledge and practice, the essayist said: "I recognize fully the disputed foundation upon which I would build, the opposition with which I shall be met. A recognized college of dental surgery to-day requires of its graduates not a limited but a full and complete knowledge of anatomy, physiology, histology, pathology and general chemistry, together with a further and special knowledge of all of these general sciences in their local and more special bearing and adaptation. Is the holder of the D. D. S. degree of 1901, a person expected to 'fix and repair teeth,' or would he be deemed culpable were he not able to recognize and direct treatment for any or all of the many and varying pathological lesions, the result of either local or general irritation, which manifest themselves within the oral cavity of his fellow man? Boiling the matter down, sifting and analyzing it, we find that two questions seem to predominate—first, shall the student of dentistry be taught sufficient of the fundamental principles of general medicine to know disease when he sees it? and, second, if he has been so taught, has he the right, and is it his prerogative to use it?" The first of these questions the essayist thought was regarded affirmatively with too much unanimity to call for discussion, but in the second he claimed to recognize a most important desideratum, and one very much open to discussion.

"I have always believed and contended," said Dr. Clifford, "that dentistry of the past has been, and should have been a specialty of the general practice of medicine. I believe that students must be educated with this fact thoroughly impressed upon them. I believe that there are two divisions in the field now known as dentistry, prosthetics and therapeutics, and that they will be known in the future as 'dentistry' and 'stomatology,' that the demands of the two divisions differ materially in their requirements, though both are essential one to the other. There seems to be a disposition upon the part of the opponents of enlarging the dental sphere to harp upon the fact of 'interference with our medical confrères,' upon the possibility of the dental specialist overstepping his bounds and encroaching upon the field of special therapeutics. No writer or speaker in the literature of the past has claimed any such desire or tendency. It is not the special therapeutics of any particular disease that should command the attention of any specialist, save those of the special conditions he is called upon to consult about or treat. But it is claimed, and very justly so, I believe, that where general pathology so effects or retards the reëstablishment of the normal health status, that general therapeutics is indicated, required or demanded for any special case, that any specialist, no matter what his field, should be competent to recognize the conditions existing and that it is not only his right and privilege to exercise and use his knowledge, but his unbounded duty to do so.

"We are told that practitioners of our specialty have no right to treat rheumatism, gout, scrofula, tuberculosis, etc. Who said they had? But, if in the course of Nature's laws, the same lowered vitality is manifested by the same symptoms that produce these diseases above mentioned, are recognized as etiological factors in our special sphere, we do claim that it is our duty to recognize these factors, appreciate their importance, and to remove them if possible. It is for a knowledge of general pathology that we would plead, for a practice of general and natural therapeutics that we claim as our right, our privilege and our duty."

Discussion of Dr. Clifford's paper was opened by Dr. G. E. Zinn, of Elkhart, Ind., who said that he had always advocated higher education in dentistry, that extension of the college course was, in his opinion, most commendable. He thought the dentist's knowledge of therapeutics should be as broad as the medical practitioner's, but that his application of such knowledge should be restricted to his special field though it should be his legal right and moral duty to practice general therapy if occasions in his practice called for it. Dr. Zinn said the word "dentist" should go into disuse, but that he did not like the word stomatologist as its successor.

Dr. Geo. W. Cook, of Chicago, through a self-confessed love to talk, followed Dr. Zinn in discussion of the paper. He said the paper evidenced much thought and was to be highly commended; that the dental profession was divided between the mechanical and the scientific; that a struggle was going on between the two for supremacy, and that in the course of time proper adjustment would be brought about between them. Dr. C. R. Rowley, of Chicago, following in the discussion, criticised the essayist for suggesting that the profession's title be changed from dentistry to stomatology. We would still be "fixers of teeth," he said, and the word dentist will remain more applicable than any other that could be devised.

Dr. M. A. Mason, of Fort Wayne, following in the discussion, said: "We are all interested in elevation of our profession, and nothing will have a greater tendency to elevate it than broadening professional education. If we could all possess ability to diagnose the pathological conditions of whatever nature that are presented to us in the course of our practice, we would not necessarily have to be general practitioners in order to greatly enhance our standing as professional men. If we could learnedly discuss with our patients their therapeutical needs the end of establishing advanced professional standing would be subserved to quite as great an extent as would be the case were we to aspire to embrace in our practice general treatment of such conditions. The dentist should be broadly educated, but as a specialist he should keep within the legitimate bounds of his specialty."

Dr. Mason forcibly expressed himself in relation to the importance of due regard for the mechanical end of our practice.

A number of others took part in the discussion of this paper.

Dr. M. A. Mason, of Ft. Wayne read a paper written by Dr. Robert T. Oliver, member of the U. S. Army Board of Dental Examiners, at present in Manilla, entitled "A Method of Treating Simple Maxillary Fractures."

A synopsis of the paper is appended as follows:

"The subject of maxillary fracture is one pregnant with many interesting details of the scientific application of mechanical principles in obtaining fixation, immobility and rest of parts, which are the main essentials to perfect union and complete cure. I shall outline my favorite method of procedure in these cases, which embodies a few new features in connection with an older one of more or less popularity with practitioners of surgery. For sake of convenience we will take a case of simple fracture of the lower jaw, and after the usual examination of jaw and determination of the lines of fracture, I ascertain the exact condition of the teeth immediately adjacent to the lines of fracture, paying special attention to two things; that they are not broken or split, and that they are firm and solid in their sockets. I then begin molding the parts into position, reproducing the normal or previous alignment of bone and teeth, restoring contour of face, plane of articulation and bringing the broken ends of the fragments into direct apposition and perfect adjustment. An assistant must now hold the jaw, mouth open, preserving the alignment, adjustment and contour of the reset bone, which can best be accomplished by standing behind patient (if in upright position), grasping from below each angle of the jaw in such manner as to allow the third and fourth fingers to support from below, and clutch firmly from within outward on the posterior fragment, allowing the second finger to do likewise with the anterior fragment, while the thumb and forefinger holding from the outside, likewise support and retain the apposition and alignment as in the manner of a long splint. If the patient is anesthetized and in a recumbent position then the assistant must stand at head of table and grasp as nearly as possible remembering in either event that continuation of undisturbed adjustment is of greatest importance. At this stage of the operation I deviate from the usual time-honored procedure employed, which, as you know, is the preparation for construction of permanent interdental splints. I now take a piece of pure silver wire (No. 18 gauge), about six inches long, sharpen each end, bend it at right angles about two inches from one end, and carefully insert the short end from without inward, through interproximal space between second and third molar—if third is not in position, then form loop around second molar, pulling the short end around to the angle, bringing the long end close up and touching the buccal surface of all the teeth on that side with end projecting anteriorily beyond the incisors, by carefully shaping this short end, that now extends well into the mouth. I form it in shape of a staple, insert point from within outward between first and second molars, and draw taut, so that it conforms to contour of lingual and both proximal surfaces. (If necessary it can be burnished to place.) The short end is now twisted to the shank of long end, by about two good turns, with a long beaked flat nose plier, at the mesio-buccal angle, forming a snug fitting loop, which firmly grasps the tooth at or perhaps just below the gum line. The long end is now grasped, pulled forward, inserted from without inward, into interproximal space between second bicuspid and first molar, pulled taut, burnished to conform to buccal and mesial surface, grasped again from inside, pulled backward, inserted from within outward between first and second molars, pulled taut, burnished to lingual and distal surfaces, and twisted with the half-inch stub of short end in such manner as to bring retained traction directly through broken ends of bone, along the line of its axis, with such firm steady force that the bone maintains its original alignment and contour, presenting a normal appearance. The jaws are carefully closed, and firmly held in position by the assistant until commencement of the next step.

"If it were not for the loosening effects of consequent inflammation the liability of unequal pressure due to muscular contraction, or the probable bungling efforts in eating, this adjustment might be all that is necessary for completion of cure, but it is advisable not to stop here but proceed in obtaining more complete fixation of parts beyond possibility of disarrangement, utilizing this wiring process as a primary factor, useful only in temporarily holding the acquired adjustment after the digital manipulation in restoration of alignment, contour, apposition and plane of articulation.

"A piece of gutta-percha or modeling compound, about 1½ inches long and ⅝ thick is now rendered plastic by hot water, and a cork ⅝ of an inch in diameter is incorporated with it about ¾ of an inch from one end. This material is now placed in the mouth, bent to conform to the alignment of the teeth, and the teeth are then closed upon it until they are estopped by the cork; the plastic material is now molded snugly to the teeth, as much space as possible being preserved for the tongue. This material, when chilled, remains hard and inelastic, and answers perfectly as an interdental splint. The cork answers two purposes, as a 'stop' and as a fulcrum over which leverage is constantly exerted by contraction of the anterior fibers of the masseter muscle, assisted by the bandage, which force supports and keeps the long, heavy drooping anterior fragment tightly sprung up into position, while at the same time it firmly holds down the posterior fragment which invariably tends to draw up out of alignment."

The essayist claims for his method of procedure absolute fixation, possibilities of hygienic cleanliness, opportunities of feeding, maximum painlessness and avoidance of the worry, care, labor and consumption of time made necessary in taking impression, constructing model, waxing up, flashing, vulcanizing and fitting the case.

The paper of Dr. Oliver called forth considerable discussion, but it was largely confined to commendation of the method advised.

"Vernon's Gold" was the title of a paper read by Dr. D. L. Stine, of Indianapolis.

"It seems remarkable," said the essayist, "that some of these deposit golds have been on the market for years and yet there are dentists who have never tried them. Certainly if they were understood the day of foil filling would be past. Again, many dentists have tried them and failed of satisfactory results. That they were not successful, however, in my opinion, as a rule is not the fault of the material. Probably the most potent cause of failure in using deposit gold has been lack of condensation due to the use of improper instruments. They cannot be manipulated successfully with flat-faced pluggers. The plugger points must be rounded and finely serrated or smooth, and should be smaller than usually used. Another cause of many failures is improper annealing, which makes condensation difficult and tends to crumbling." After speaking of experience with various kinds of deposit golds and commenting upon general unsatisfactory results of trying to work any of them with improper instruments, and without maintaining perfect cleanliness of the instruments and the field exposed to their contact, the essayist said: "Since the first few months, after becoming familiar with the 'Vernon' gold, I have never had the slightest trouble in any way, my fillings after two and three years of service retaining the smooth finish, and even polish first given them. I find this gold to be much more soft and plastic than any of the others, and that it can be worked more easily and rapidly for the reason that it is more readily condensed, and cannot be balled up or bridged. It spreads very readily under the plugger, and can be perfectly adapted to the walls and margins of a cavity with ease and certainty. Cavities can be filled with it successfully, which could not be filled at all with any kind of foil. It often saves cutting away frail enamel which it is very desirable to leave on surfaces exposed to view. This material is worked like all similar products; it may be malleted, but hand pressure is far better for both operator and patient. The important thing to watch is the annealing. It is best to keep it over the annealer continuously while working. When not annealed sufficiently it crumbles badly. Every filling should be well burnished after being condensed, and again just before the final polishing."

Discussion of Dr. Stine's paper was opened by Dr. F. R. Henshaw, of Middlebury, Ind., who said that in his opinion there was no time saved in using deposit gold, and that there was more danger of imperfect results from their use than from the use of foil; that he would not use them in contour work, that when he uses it he uses Vernon's in preference to others, but that in all cases he uses foil in finishing his fillings to secure better finish. Dr. J. W. Stage, of Goshen, following in the discussion, said: "No material used, if not perfectly understood and properly used, could work greater harm than deposit gold, but if expertness is attained in its manipulation it may be made to give excellent results." Starting fillings with deposit gold, and finishing with foil was advocated. Tying up to any special material was disparaged.

Dr. S. B. Hartman, of Ft. Wayne, said he had had considerable experience with deposit golds, but had abandoned their use because they were not satisfactory to him. He did not approve of combining deposit gold and foil.

Dr. B. P. McDonald, of Goshen, expressed doubt in the stability of this class of gold, instances having come under his notice where fillings made of them, after certain periods of time, had disintegrated to an extent which admitted of their being pierced by instruments. He raised the question as to whether gold prepared in this way was not peculiarly subject to chemical influences.

Dr. W. V-B. Ames, of Chicago, speaking upon the chemical question raised by Dr. McDonald, said that in these deposit golds every atom of the metal was covered by a film of oxide, and that this fact might under some chemical conditions aid in deteriorating chemical effects.

"The Basil Temperaments in Relation to Prosthesis" was the title of a paper read by Dr. B. J. Cigrand, of Chicago.

The inference is borne of familiarity with the essayist's argument that Pope would have done better had he said, "The proper study of mankind is man's face," his idea evidently being that therein is comprehended the most potent medium for acquisition of general knowledge of human nature. If, as the essayist declares, the face is the window of the brain, the avenue of the mind, the servant of the emotions, a mirror from which the feelings and impulses are reflected, the map of the heart proclaiming the character of the individual to all who can read, a dial from which is reflected the atoms of individuality which make up the career of the owner, the herald which advertises the true composition of the man and tells in unmistakable language the traits, peculiarities and characteristics of the person wearing it, then surely there is afforded the student of physionomics opportunity to read and know his fellow men as he would read a book. The practice of dentistry, Dr. Cigrand believes, not only demands a knowledge of physiognomy and kindred sciences which reveal the temperament of man in its practical application in prosthesis, but it affords most favorable opportunity for study of these sciences which tend to promote ocular determination of the character, disposition and idiosyncrasies of those with whom he is thrown in contact. "The dentist," says the essayist, "in practice meets with and has to contend with all sorts of dispositions, the whole category of peculiarities of human nature being subjected to his observation, and opportunity for study along these lines is generously afforded him so that he may, if he wills, qualify himself to follow the wisely suggested rule to 'keep on the dexter side of innate character.'"

The paper of Dr. Cigrand, in presenting his theories of practical physiognomies, was so exhaustive as to preclude a review of it in detail in this report, nor does the space at its disposal make it possible to include in it the entire program of the meeting.

THE ODONTOGRAPHIC SOCIETY OF CHICAGO.

A regular meeting was held May 20, 1901, at 8 p. m., with the President, Dr. L. S. Tenney, in the chair.

Dr. F. B. Noyes read a paper entitled "Early Embryonic Development and the Formation of the Mouth and Nose Cavities."

DISCUSSION.

Dr. George W. Cook was asked to open the discussion. He said: I was very much interested in this beautiful demonstration of a most important subject. To my mind it demonstrates conclusively the advantage to be accrued from being thoroughly familiar with the development of the embryo, and especially the development of the mouth and nose cavities. Dr. Noyes has shown us the development and evolution of the cell, and he has carried us by successive stages to the final culmination of cell activity. The physiology of the cell is a most important matter. Starting as a protoplasmic substance and developing as it does, a stimulus, however slight, might materially influence its development, causing perhaps great deformity and a lack of tonicity. The influence of any disease on the part of the mother or any toxic condition of the individual might influence the cell in its further development. The delicate mechanism and the very delicate physiological function of that cell may play a great part in the future structure of not only the teeth, but the parts surrounding them. Another interesting feature in cell development is the tendency of cells to perform certain duties, to be attracted by a certain stimulus, or to be repelled by it. On this line the function of the cell is developed. It is apparently the first tendency of the cell seeking functional activity. The botanists speak of this as orientation of a cell, the tendency of plants to turn their faces toward the sun and light. The same applies to the animal cell seeking out the thing that is of advantage to it, and rejecting that which is detrimental. All this, to my mind, is of great bearing in the development of tooth structure. It is that chemical combination of elements which make up the teeth that plays a great part in the structure, in its inherited disposition to resist or be acted on by external influences. The epithelial cells which gather limy substance and develop the enamel are a very apt illustration of the specialized activity of the cell. Anything that will influence the cell at this time will influence the chemical compact of that normal substance. The storing-up of the lime salts is an important thing in the life of that tooth. To my mind, it exercises an important influence on the early decay of teeth, more so than the action of saliva in the future. The arrangement of the molecules in the enamel has something to do with its power of resistance, and that is influenced very largely at the time when the cells are differentiated, and seeking their proper place. This subjct is one of the fundamental principles of all sciences, especially in connection with the healing art, no matter whether it is in dentistry or in the treating of the kidney. It is the basis upon which rest the foundation and principles of health and the healing art. The importance of this subject warrants a closer study of it, and I have often been surprised to see men, in our profession especially, pay so little attention to it. I think the future dentistry will consist not so much of the construction of crowns and bridges, as of the proper manipulation of things tending to give a better development to those structures which we have to deal with.

Dr. W. H. G. Logan: I wish to compliment the essayist on his very excellent paper. But would like to ask the question, whether he can reason out the formation of clefts; why it is that it is practically always found on the left side? We know that it is either to one or the other side, but in probably 98 per cent of cases the failure of union is on the left side, both of bone and soft tissue. I have never seen but one case of median cleft, and that was of the lip only.

One other thing of interest, not mentioned by Dr. Cook, was in regard to where we find a patient about eight years of age, in whom the formation of the six-year molar was imperfect. We find a great many dentists destroying the pulp tissue, and filling the root canals, when the patient is but eight years of age. When that patient is fourteen years old, we find the tooth abscess, as the result of the gutta-percha passing through the end of the root. We must not forget that. If I find a tooth broken down in a child seven or eight years of age, I extract that tooth immediately, for the simple reason that it is only a question of time when that tooth must be removed, and it is better to do it then than later on, when it has gone on to abscess formation and the second molar has erupted.

Dr. Noyes (closing the discussion): I thank you for your kind attention, and again apologize for my inability to properly supplement the lantern pictures with the clay models. In regard to Dr. Logan's remarks, the study of tooth development is a subject which ought to be taken up some evening by itself. He might have drawn the same lesson in regard to the formation of the second molar. The matter of the degree of development of roots and root canals is one which should never be lost sight of in the treatment of the first and second molars of children.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held May 28, 1901, at the Victoria Hotel, with the President, Dr. L. L. Davis, in the chair.

Dr. W. V -B. Ames read a paper entitled "Some Amalgam Experiments."

DISCUSSION.

Dr. C. N. Johnson was called upon to open the discussion: I am very glad indeed Dr. Ames has brought this subject before the society. I had not expected to speak on the subject because I am not enthusiastic about it, but he has mentioned two or three points in his paper upon which I should like to ask questions rather than to make suggestions in regard to them. One is as to precipitation. Would you consider it a more expensive process to make these alloys by precipitation than by melting?

Dr. Ames: There is nothing intricate or complicated about it. It is a simple process, and whether it is economical or not, I am not prepared to say.

Dr. Johnson: My impression is that it is a much more difficult plan than the melting process.

Dr. Ames: You refer, I suppose, to precipitation of alloy?

Dr. Johnson: Yes; if that can be done, it would be more reliable than by melting. It has been the complaint of manufacturers, those who have studied the matter very closely and have endeavored to get out an alloy that would be reliable, that they are never certain of the result; that every melt has to be very carefully tested to be certain that they have the given qualities to it. The complaint has been made that they may take metals that are apparently the same, treat them in exactly the same way, and that two products will give very different results. If this can be done by precipitation in a more definite way, it would be a great advance over the methods of preparing amalgams that we have now.

I have been much interested in these specimens. These two alloys appear to me to be very different in results, and one certainly gives a much better result, so far as density is concerned, than the other. It can be detected with the naked eye. That seems to me to be an important matter. In drilling out old amalgam fillings, it has been apparent that the amalgam mass has been porous throughout. A filling made of one of these alloys would be porous in the mouth. It has been a revelation to me to see those two specimens. I think that is an important point to be brought out, and one which enters into our work in the office. This whole question of amalgam, as the essayist has said, is somewhat unsettled. We have not an amalgam that I know of that can be sent out to the profession generally that will give us uniform results. If there is such an amalgam, I shall be glad to know it. I do believe, however, that the amalgams we use now are going to give us better results than those we have used in the past, but as yet some light needs to be thrown on amalgam. The question of precipitation suggests a more definite, reliable method of making amalgam.

Dr. A. O. Hunt: I wish to compliment Dr. Ames on his work. These experiments, in all probability, bring each metal into a purer state than we get it ordinarily in the melt or in the ingot. There has been a question in my mind in regrad to the alloys and the tests made as to how valuable the experiments are in regard to shrinkage and changes that each mass must pass through. All substances that crystallize usually undergo two processes, namely, expansion and contraction. Some of them contract in the first stages of crystallization and expand in the later stages. Others expand in the first stages, and contract in the later stages. This is true of some of the metals that enter into dental alloys. There has been some doubt in my mind as to the accuracy of measurements in regard to expansion and contraction. As Dr. Johnson has said, whatever the experiments may have been that have been practiced in the last six or seven years, they have given a better class of amalgams than we have ever had before, and clinically there seems to be less change in them. We do not find the condition so often with all amalgams nor to the same extent, that is, after fillings have been worn a limited time, we can see the separation of the filling from the walls of the cavity. I do not think modern amalgams have entirely taken that condition away, but still they have modified it very much. I hope the doctor will go a little further with his experiments, because I believe he is on the right track in regard to combining silver and copper, and amalgam fillings have their value in preserving teeth in proportion as the copper can be utilized without creating too much discoloration.

Dr. J. W. Wassall: The great trouble with any amalgam, even with a perfect one, is that it is never mixed by the same man twice in the same way, no matter how careful he is. The temperature of the room, or of his hands, or the mortar may vary. Then there will be a difference in the quantity of mercury he uses. All such conditions obtain, so that we can never get two amalgamations that are identical. Amalgam will therefore, always be an imperfect filling material under the most favorable circumstances. I do believe, however, that Dr. Ames is reducing the chances which we take in using amalgam, and I am convinced that the use of precipitates of the pure metals will give us better results than we ever had heretofore. We are fortunate in having a practitioner of dentistry working on this subject. Since the use of porcelain inlays has been talked about so much, and since so many have begun the use of them, they will soon take the place of amalgam in all large cavities. It has in my own daily work given place to porcelain inlays, that is, in large broken-down teeth which require large restoration, and we do not want to cut down for a crown, I think we get much better results with porcelain inlays. Therefore, I do not feel the need of amalgams as much as I did formerly. I hope Dr. Ames will keep on working in this direction. He has done a good deal for cements, and he can do a good deal for amalgam.

Dr. J. H. Woolley: In the old days, when many of the old operators used what was called amalgam, we used to file the Mexican silver dollar as much as needed. We amalgamated the mercury with silver first, then afterward added tin with it. That seemed to make a very hard and preservative filling, but we used great care in the packing of this amalgam, taking very small quantities at a time so as to lessen its porosity. We managed to secure in our work a pretty thorough filling with amalgam, and in those days, although we did not have the advantage of our modern system of study, the result experimentally was not very much different in the teeth filled with the alloys, or amalgam at the present time, and we also managed to save teeth.

Dr. J. G. Reid: I am inclined to think that with all the modern investigations that have taken place within the last four or five years, there is still a deficiency somewhere unsolved. What it is, I am not prepared to say. I have had some very close relations, as you all know, with Dr. Kester in regard to amalgams, and as a metallurgist, I believe that he practically is as familiar with metals as any one who has had anything to do with metals that are used by dentists, and, at the same time, I have been somewhat surprised from clinical observations, but even as careful a person as he might be in the manufacture of alloys, I have been disappointed with them and am today. I do not know that we are any nearer the goal of perfection regarding alloys today than we were many years ago. We may know more about the physical conditions of them, but I mean as to the practicability of alloys saving teeth. I am not certain that we save any more teeth today with the alloys that are made, from a clinical standpoint, than we did a number of years ago. We know more about the alloys. There is no question as to the practical value of alloys in saving teeth, but I am not satisfied that we are saving any more teeth by them than we did several years ago without their use. These statements are based on clinical observations. There may be some improvement made in them, but there is a lack somewhere else, and what that is I am not prepared to say.

Dr. E. J. Perry: As a metallurgist and from a scientific standpoint, I must confess that I do not know anything about amalgam. I have put in amalgam fillings, but that is not the subject for discussion. We have got to make amalgam fillings for our patients. There is no question about that at all, and we have to turn our faces toward making a perfect amalgam. I am inclined to agree with Dr. Woolley in the statement that a perfect amalgam might render unnecessary that deftness and cunning of the hand of which he spoke. I should very gladly welcome a plastic which will equal gold in every respect. I am perfectly willing that science shall discover a method of filling teeth which will be an improvement on our present method, even though it should entirely revolutionize dentistry, if it benefits humanity. That is what we are working for, ostensibly at least. In the making of fillings I have found this out: We must be definite in the proportions of amalgam and mercury that we mix in the mortar and thoroughly amalgamate it and keep it soft, and have the assistant work it in the hand and keep it soft, and use a matrix between the teeth, and I do not know that there is anything more you can do to accomplish the result. It may leak, drop out, and it has to be made over again. As for a large filling where the nerve and pulp are not exposed and we feel that it takes more skill than we have got and more money than the patient has got, for various reasons we do not want to fill such a tooth with gold. It will surely fail. I have learned from Dr. Wassall's assistant how to make those out of porcelain inlays. I have made at least a dozen in the last six weeks or so that have given me great satisfaction.

Dr. E. A. Royce: I find it necessary to repeat a part of the speech made by Dr. Perry, namely, that I know very little about metallurgy and very little indeed of the alloys except from their use in clinical work. But I wish to thank Dr. Ames for his admirable paper. I have not arrived at the stage where I can get along without a good alloy. I have not arrived at the stage where it takes in the least from my skill in working gold to put in an amalgam filling, but I have arrived at the stage where I think it takes considerable skill to put in a good amalgam filling. Much of the trouble we have had with alloys has been attributed to the manner in which the fillings are inserted. I understood from the remarks of Dr. Woolley, that he thought if we found a perfect amalgam, we would be likely to lose our skill as gold operators. If we found a perfect amalgam and allowed ourselves to become sloppy, as a great many operators are, I presume there would be a loss of manipulative ability in regard to filling cavities with gold.

I am very glad the subject of porcelain inlays has been brought up in this connection, because there is a large field for them. Furthermore, it seems to me, there is a large field for a perfect amalgam, and I am in hopes that Dr. Ames has got started on the right track for an alloy which will be more perfect and reliable in its workings and more stable perhaps in color than anything we have at present.

Dr. A. W. Harlan: The presentation of Dr. Ames' paper on this subject is a matter for congratulation. The use of precipitated metals for the making of amalgams was begun a good many years ago in England, and perhaps in other countries, but I happened to know about it in England. Dr. Cutler, of Memphis, began it. When I was in England, in 1881, I brought back with me some precipitated palladium for filling teeth. I bought all that the dealer had, and it cost $35 an ounce, which was one objection to its general use.

In the experiments that were made by Bogue and Hitchcock as early as 1872-3 with different amalgams, they used some of the precipitated metals, more particularly palladium. I introduced some precipitated palladium amalgam into teeth in the latter part of 1881-2, and when my stock was all used up I stopped. I noticed one thing, that this particular metal acted very well. From that time to this, with the exception of a slight reference to it in Brant's book on Metallurgy, I have not had it called to my attention.

With reference to the particular work of Dr. Ames, it seems to me that we have a more definite method of combining metals with mercury than any of the melting processes of bringing metals together. Let us take, for instance, precipitated silver of a certain grade, which can be demonstrated by the microscope, and precipitated copper and precipitated tin and other metals, and if the manufacturer can take all these and combine them in such a way that the ordinary dentist can use them without having each time to weigh out five grains or ten grains of silver, and one grain of gold, and half a grain of tin, or two grains of tin, or whatever the proportions may be, he has got a big fortune ahead of him. It does not matter what it will cost, this will be the kind of alloy that will be used, because it will promise more definite results. Take silver and tin and gold, or platinum, or any combination of metals and melt them together, and cut them up by any process of machinery, and age them as they have to do in order to keep them more or less uniform, there is always something unfinished, because the man who is doing the melting may make such a great difference in the degree of heat, so that some potent part of one metal or two metals in the alloy will be lost. In talking with Mr. Lob the other day about the melting point of gold and platinum, he told me that in the recorded registration of the melting points of metals there were variations running up into hundreds of degrees, even among the very best men. He knew there was a variation in the melting point of gold, for instance, of nearly 600 degrees, and he spoke of some other metals.

The author of this paper tonight has presented in a modest way the beginning of a new method, because I take it, all that has been done in the past has been more or less amateurish, and only slightly experimental and never practical. It may be the beginning of the dawn of the perfection of an alloy that will really save teeth. That is what we are trying to get at, and I do not believe it will lessen skill or the handicraft work of anybody, because it means that the work must be done with great accuracy. How are the ordinary fillings put in by the vast majority of dentists today? Many of them are mixed entirely in the palm of the hand, with a temperature which is different from that of the mortar, and combined with a certain amount of moisture, salts, etc., that are exuding from the skin. No matter how clean the hand may be, that is not scientific. Then, cavities are not thoroughly dried before the amalgam mixture is introduced, and it is introduced in too large masses; it is not thoroughly incorporated, and on account of the uncertain way in which the mercury is added by not being wet, there is too much or too little, and no wonder there are so many failures. Furthermore, many men do not adjust the rubber dam when they put in an amalgam filling, and they depreciate their own skill and weaken the filling by doing it in that way. I see no reason why, if a well made amalgam filling is introduced properly and the cavity properly prepared, it should not be as good and last as long as gold, even though it does not require as much time for its insertion. Before the publication of Dr. Ames' paper, perhaps he would like to refer to that portion of Bogue's and Hitchcock's work, which is published in the Transactions of the Odontological Society of New York, about the use of precipitated metals, and also about the work of Weagant in the precipitation of palladium, which will be found in the Transactions of the Odontological Society of Great Britain, a copy of which is in the Newberry Library, and some reference in a footnote should be made to the work of Brandt. Later, the question of the different proportions and of the grain and necessarily of the purity of the precipitation will come out. I think that this is well worthy of careful thought, and I hope every man in the room will consider it carefully. When I go to England this summer, I will see if I cannot get more precipitated palladium, and see what I can do with it. They already had the mercury incorporated with it, and it was in a fine black powder, which only needed to be thoroughly heated to put it into such shape that it could be mixed into a pasty mass and introduced into the tooth. Weagant, in his first efforts with copper amalgam used precipitated copper, so that reference to it perhaps would not be out of place to make this paper complete. I am not sure there is anything in Essig that will enlighten the dental profession. Recently I had occasion to read an article in Morley and Muir's Dictionary of Applied Chemistry on the subject, and there is nothing there that is very tangible. I happened to be looking up another subject and read it incidentally.

Dr. Ames (closing the discussion): I do not wish to seem to be an amalgam enthusiast. When it comes to what to do with a large cavity that I cannot fill with gold, you know that the way I treat these cases is to make a gold inlay. I have made more than a dozen gold inlays where I have put in one amalgam filling in the last ten years. I did once use a great deal of copper amalgam because I did not believe in other amalgams, and found that that was not good practice. Then I happened to take up gold inlays, and I have used them very extensively. A few years since when we were led, by same ambitious alloy makers who were good advertisers, to believe that alloys had been very much improved at their hands, I rather cautiously took another start in amalgam work. I regret that I am obliged to say that in my hands the much vaunted alloys produce nothing of which to be proud of or with which to be even satisfied. Not that my fillings have been actual failures, but they present very unattractive surfaces and edges, the claims as to color, edge, strength, etc., being unwarranted with the materials in my hands. The few fillings made some years since with mixtures of the precipitates are showing up much better today than any which I have been able to make in the interim with the much vaunted alloys. In my early work I did not discover that with a proper precipitate we could have a two-metal amalgam, i. e., silver and mercury. In alloy amalgam 80 or even 75 per cent of silver gives an unworkable mass, while with the pure silver precipitate and mercury we have very attractive working qualities. The results as stated in the paper mainly impress me with the idea that there has been too great an effort to work to zero as regards expansion. I am doing a little more amalgam work these days than is to my taste because I wish to satisfy myself as to whether this matter of working to zero has not been very much overdone. I think it has. As to palladium, I doubt its value either alone, with mercury or mixed with other metals. I have on hand some of the precipitate obtained some years since. My use of it has not been at all encouraging.

BANQUET TENDERED TO DR. W. D. MILLER, OF BERLIN, BY MEMBERS OF THE PROFESSION IN CHICAGO.

[Dr. Miller came to Chicago one day in the afternoon and as his engagements required him to leave in about thirty-six hours, about seventy-five members of the fraternity were gathered together to do him honor and enjoy his society for a few brief hours.]

Dr. A. B. Clark, president Chicago Dental Society, presiding.

Dr. G. V. Black, introducing Dr. Miller:

Mr. Toastmaster and Gentlemen: While this is a most pleasant occasion, it is also a most serious one, and especially so when we attempt to carry out plans of the importance demanded, upon the spur of the moment and without time for appropriate preparation, with that dignity due our honored guest who is with us tonight.

About the middle of the century that has just passed there occurred some notable discussions between Pasteur, of France, and Baron Liebig, of Germany, and also between Pasteur and Bastian, that interested greatly men who were skilled in the natural sciences, especially in chemistry and biology. These discussions related particularly to the influence exerted by microörganisms in the processes of the decompositions and fermentations. Among the men who were attracted to and interested in these discussions, some were of the medical profession, and Mr. Lister, then of Glasgow, Scotland, conceived the thought that if microörganisms have to do with decompositions and fermentations, they may also change the character of secretions in wounds so as to modify the course of the healing process, or even to cause what was then known as surgical fever. With this thought he adopted means of excluding them from deliberate surgical wounds and was surprised to find that under these circumstances wounds healed regularly by first intention, and without a drop of pus. This experimental work was begun in 1859 and the publication of the results surprised the medical world; and as the plans were tried by others and the results confirmed, the surprise deepened into amazement, and the principal interest in the study of microörganisms was at once transferred to the medical profession.

But the prosecution of these studies was surrounded with the most extreme difficulties, and after years of close, careful work, there came a note sounded by a man then living in one of the smaller cities of Germany calling the attention of the world to plans of cultivating microörganisms by which species could be separated and studied with certainty and the effects of individual species upon the lower animals, or upon man, be studied. This man was Prof. Koch, now of Berlin, who devised the plans of culture in solid and semi-solid media, and also discovered the plans of staining with the analine dyes in the last of the seventies.

As early as 1867 there had been studies published, first in the German, and, in 1868, in the English, by Leber and Rottenstein, giving a strong suggestion that microörganisms had to do with caries of the teeth and were therefore of interest to the dentist. And then in 1881 there came even a stronger suggestion of the same nature from Milles and Underwood, of London. However, the plans for the cultivation of microörganisms had not been mastered. But so soon as plans of cultivation had become sufficiently mature for certainty of work we began to see articles in the *Independent Practitioner,* edited by Dr. Barrett, written in simple, clear and forcible language, regarding the cultivation of the microörganisms of the mouth and detailing their relation to caries of the teeth. These articles appeared month after month and thoughtful men began to inquire, "Who is it writing these articles?" "Dr. Miller, of Berlin." "Who is this Dr. Miller?" Then one and another said: "Why, I know him, he is an American; he is from Ohio; he was educated on this side of the water." And many of us were all the more interested in him because of that fact. As these articles continued month after month, setting forth fact after fact in consecutively related detail, thoughtful men in dentistry were amazed at the results obtained. These clear and forceful statements showing clearly to some the truthfulness and the value of the investigations in all of their details were not received by some others as the whole truth, but as the truth was confirmed by the repetition of the experiments in part by others, and as the facts cited were more carefully studied and thought out, the dental profession came more and more to realize that a great work had been done, and also that the results had been reached only after years of study and the closest and most continuous mental strain. Still, as time went on, articles continued to come on this and related subjects until, not only in America, not only in Germany, but in all countries where scientific dentistry is known, the name of MILLER was known.

Then we began to miss his articles from the journals and made inquiry as to why they failed to come, and learned that the author was ill. Then came anxious months throughout America and Germany and the dental world, which lengthened into years as he continued ill. But after a time we learned with glad hearts that his condition was improving, and later found that he was writing again. And now we of Chicago are proud to greet him; we are proud to shake his hand; we rejoice to see him fairly vigorous and able to do more work, although we recognize that he has already done more than enough for one man. Long live Miller! So we come together with one accord to give him welcome, to show him our appreciation of the work he has done for the dental profession and for each one of us. We have an individual interest in the work he has done, in the continuance of his life, in the continuance of his happiness as a dentist, in the school which he is conducting, and we wish him success in that work. We welcome him personally, not only as an American, but as a German coming to us from his adopted country. We recognize that the German blood is largely mingled with the American blood, and though he may reside in Germany, he is to us none the less an American.

Dr. Miller, we welcome you with all our hearts among us here this evening. (Long applause. Three cheers for Dr. Miller.)

DR. MILLER SPEAKS.

Dr. W. D. Miller, Berlin:

Mr. Toastmaster, Colleagues: I am sure that you all sympathize with me in my present position. I find myself in the midst of so much fellowship and hearty welcome that I am at a loss for words to express thoughts as deep as my feelings of gratitude to you. I am more than pleased to witness the progress that has been made in dentistry in Chicago the last few years, and the colleagueality and cordiality which exist among the dentists here constitutes, I think, one of the greatest elements of success.

For the last twenty years I have been traveling back and forth across the ocean, and every time I have started to America it has been with the intention of visiting Chicago while here. But when I get out to my little farm and to the country, which I believe is the only place God ever intended man to live in, I become so in love with it that I linger on and on until I suddenly realize that I have about twenty-four hours to catch my boat at New York. It has been said lately that I go through New York as if the police were after me. But this time I was resolved that, come what may, I should visit Chicago, and for various reasons. Chicago is one of the wonders of the world, and every one should make a pilgrimage to it at some time of his life. Another reason is because it is recognized to be one of the greatest centers of dental education in the world. Many of the men who have done so much to uplift our profession, and some of the best practitioners in our profession have received their dental training in Chicago.

One of my chief reasons for visiting America was for the purpose of making a study of the present status of dentistry and of dental education in America, in the hope of gathering some new ideas which might be adopted in the school with which I am connected and of bringing about a better understanding than that which at present exists in Germany with regard to the American dental colleges.

If we wish to comprehend how the present opinion of American dentistry and dental education came to be prevalent in Germany, we shall have to go back twenty to twenty-five years in the history of American dental education, when there were few dental colleges. The courses covered at that time two years of about four months each, and if the student could convince the faculty that he had given a certain amount of time to the *practice* of dentistry, a year would be placed to his credit and he could come up for his examination at the close of the first course. If, as no doubt was often the case, the student entered the college two or three weeks after the beginning of the course, his time of study was proportionately shortened. As a result of this provision many men from abroad, and particularly from Germany, who could not take up the study of dentistry in Germany because of lack of preliminary education, came to America with certificates of having been in some way engaged in the practice of dentistry, which certificates were, moreover, often of a very shaky value, and after a few weeks could return with the title of doctor. To these must also be added those who bought their diplomas.

Now there is no people who think more of titles than do the Germans, and no people who has greater respect for titles, for if a man there has the title of "doctor" it will have been obtained only after many years of hard study. Hence it is not to be wondered at that they were aroused when they saw men with the most meager education coming back from America after a few weeks' absence and parading their titles of "doctor."

Naturally Germen dentists protested, as also did the Americans residing in Europe, who foresaw the effect which the condition of affairs must have upon the standing of American dentistry. Likewise the better men in the profession in America called for more stringent measures and advanced requirements in dental education. The formation of the National Association of Dental Faculties was a most fortunate step and I believe that it has done a vast amount for dentistry in America. At its last meeting, if I am not mistaken, it was resolved that two years of high school work should be considered as the minimum requirement in the way of a preliminary education. I am very glad of this. The matter of a preliminary education has always been one of the weak points in dental education in America, and one of the chief reasons why the D. D. S. is not in good standing in Germany. The State of New York requires three years of high school work and the dental department of the University of Michigan four years, and I sincerely hope that the example of Ann Arbor will soon be followed by all the other colleges of the association.

I am told that the builders of your great architectural structures in this city often go down forty feet to place the foundations, and yet there are many who would lay the foundation for the much nobler structure of a human life by barely turning the sod. Every person requires for his special work a special training, but a broad and firm foundation, which must be in the form of preliminary education, must underlie it. And I do not think we go too far when we demand the high school education for students of dentistry. (Applause.)

It should not be the object of the dental colleges to train their students merely for the pursuit of their professional work, merely to be dentists, but to be men and respected citizens of the United States of America. Indeed, the elective courses in American colleges, comprising botany, zoölogy, chemistry, physics, microscopy, Latin, German, French, etc., could only be of the greatest help to every student of dentistry and to every practitioner of dentistry. Most certainly the education of the fingers dare not be neglected. A man may be as wise as Solomon and still not be a success as a dentist, if he has not trained his hands to act in accordance with his knowledge. Nor will the education which is the best impose on the student a mass of work which will not be of value to him in his later life. I am also pleased that a four years' course has been required by the American Association of Dental Faculties, and consider it very fortunate that the length of the year was not reduced to six months; this would have been a backward step and would have produced a bad impression abroad.

It is hard for Europeans to understand the present state of the American college and of American education, for the reason that your institutions are still judged on the basis of conditions which existed here twenty-five years ago; and they do not realize the advancement which has been made. Moreover, the traffic in diplomas, which is being carried on in your city, has not raised the standing of American dentistry in Europe. Of course, it is no worse to sell than it is to buy a diploma, and that so many of these diplomas were sold to Germans can be just as much charged to Germany as to America. But what nobody can understand is how these mills can obtain and hold charters, yes, by the dozen, from the legislature of your State permitting them to carry on their damnable traffic. A war has been instituted against these mills, and I sincerely hope that not only they will be torn out root and branch, but that those who legalize this practice will be brought to a realization of the enormity of the crime which they are promoting.

I am more than delighted to find that besides the work done in chemistry, courses in histology and bacteriology are being required in all of the better dental colleges in America, although I am afraid that the thoroughness of these courses still leaves a great deal to be desired in many of the colleges—i. e., that the colleges of the association do not all quite live up to the requirements published in their catalogues. That the better ones do live up to them I am thoroughly convinced, and it is to be hoped that the others will soon be "brought into line."

The training that the students receive in these courses ought to inculcate into their minds a spirit for original research, which will have a most beneficial influence upon the future development of our profession. I shall be able to carry back to Germany a *very* favorable report of the progress of dental education in America so far as I have had an opportunity of becoming acquainted with it in Buffalo, Ann Arbor and Chicago.

I close my remarks with a repetition of my thanks for the courtesy which you have so generously shown me in your great city.

Dr. Davis: Mr. Toastmaster, Gentlemen—The suddenness of this call, as well as the importance of the occasion, have quite driven from my mind the few ideas I might have been able to put forward in my remarks to-night. My reputation is better as a listener than speaker, and I can assure you this event will conclusively prove that fact. It is only by the assistance of my friends on either side, who have been suggesting lines of thought and prompting me with the proper words, that I am able to say anything.

It is my great honor to represent the Odontological Society of Chicago in this gathering of representative bodies of the dental profession to do honor to a noble man, and I regret that some one more able and fluent of speech was not selected to do justice to such an occasion.

When I took up the study of dentistry some twenty years ago I was much impressed with the works of Harris and others whose volumes were the text-books for students; but among those names of living authorities the one most indelibly printed in my mind, and the one giving me the greatest inspiration, was that of our guest to-night, Dr. Miller. I became interested in histological work at the University of Michigan, later it became my good fortune to become associated with Dr. Black, and under his direction follow out the experiments and discoveries of Dr. Miller in bacteriology. Since then I have had the opportunity to see his work, and now the great pleasure of meeting him.

It is a great honor to any city, not to say to any society or group of societies or colleges, to have with us the living representative of the highest there is in the dental profession, and I take it as a great honor to be able to add my little encomium of praise and words of hearty welcome on such an occasion and to such a man. He comes to this country to recuperate. I only hope that this specimen of the products of Ohio, which are always known as the best, may last longer than the Ohio man, our loved President, who has just passed from us; that he may yet do even greater things for the dental profession than he has already accomplished; greater things hath no man done. I hope and pray that he may be preserved in good health and strength; may he long be spared to his work. (Loud applause.)

Dr. Clark: I am sure we all second the words of Dr. Davis in wishing for Dr. Miller long life and a continuation of his great usefulness to our profession, the profession which he has chosen.

We have with us another president of a dental society, this a very large one, and I am sure it will be glad to express its welcome to Dr. Miller through its president, Dr. Tenney, of the Odontographic Society of Chicago.

Dr. L. S. Tenney: Mr. President and Gentlemen—It was not until I had arrived here this evening that I was informed that I would be called upon, and while I feel it a great honor to speak on such an occasion as this, I hardly know that I can do so more than to join with those who have preceded me in expressing my pleasure and satisfaction of having met and become acquainted with one who had achieved so great a reputation for himself as our honored guest.

It is said that only a man's memory lives after him, but that is not the case with our friend, for he has built for himself a monument that will endure as long as dentistry is practiced.

The work and scope of modern dentistry is growing year by year, but as rapid as our progress has been in the past we may look forward with confidence to a still more rapid advancement in the future, and I believe I make no mistake when I say that it is to scientific work such as Dr. Miller is doing that we must look largely for our future growth.

These are days of close study and inquiry. We are no longer satisfied with mere theories, but seek reasons and causes, and just as the microscope has revealed to the physician and surgeon hidden processes that better enable them to combat disease, so the microscope is revealing to us many facts that enable us to combat the diseases that come within our province to treat.

On behalf of the Odontographic Society I welcome Dr. Miller here tonight. We still style ourselves a young society, but it is great in numbers and great in the love of its profession.

We have read his works, we have profited by his teachings and we hope that for many years yet to come he will be spared to that profession which will always honor and revere his name.

Dr. Johnson: Gentlemen—It is a great pleasure to me to be one of those to welcome Dr. Miller. We have been hearing only of the great and good points in his character. But I want to say to you that there is another side to that man which I am going to expose. Today at luncheon with him I had a shock. I had been expecting him to propound some great scientific truth, and when we were seated at the table I was looking for some word about a new microbe. Imagine my surprise when he leaned across the table and said: "Say, do you know where there is a good ball game today?"

I appealed to Dr. Black, for I knew he was familiar with base ball, but he went back on me, and said he didn't know. But that was not the worst; Dr. Miller is an enthusiastic golf player. (Applause.) Now you gentlemen over there who seem so much amused and interested had better wait a moment. I learned later that not only is Dr. Miller a lover of the royal game of golf, but that he is the champion of all Germany, so it is lucky for you that he is not going to stay long in Chicago, else he would likely lower your colors. However, it did please me to learn of this, for it shows that there are many sides to this man. Just go over and feel his right arm, and you will be pleased to find that there is a good deal of physical matter about him as well as a great deal of brain.

Yet, while he may be a good judge of base ball and an expert golf player, I think what interests us most is his relation to dentistry. I read his articles as they appeared along in '84 and '85, and was charmed and deeply interested, as was every one who read them. But it was not till years afterward that I became really impressed with the infinite detail of his work and the painstaking care of his methods. I had been invited to visit Dr. Black at Jacksonville and witness the course of some of his experimental work on certain phases of a subject we are all interested in, and after noting the exceeding care and the constant attention to the minutiae of the work through an entire series of experiments, I said to Dr. Black: "Is it possible that all scientific investigation is carried on so carefully as this?" And he said in reply: "Some of it is, and much of it is not; but that is the way Dr. Miller does his work."

And I am inclined to think that with all of the good things that have been said of Dr. Miller he never received a greater compliment than that.

I wish to join with those who have already spoken in welcoming Dr. Miller to us and in expressing the hope that he may long be spared to us and to his work, for I believe that he has still much to accomplish in the field of scientific dentistry. It gives me pleasure to welcome him to-night and my only regret is that he cannot stay longer with us.

DR. CLARK: I told you you would be glad to hear from Dr. Johnson, and I am pleased that he can bring to us some knowledge of the other sides of Dr. Miller; and we rejoice to know that he not only can follow a microbe, but that he can follow other things.

We have with us to-night another from whom I am sure we shall be glad to hear, a member of the State Board of Dental Examiners, the only one, I believe, who was recognized after the great fall. I bring him forward in order that he may tell us something about that board and of what they will do in the future. Gentlemen, Dr. J. G. Reid, secretary of the Illinois State Board of Dental Examiners.

Dr. Reid: A while ago Dr. Brophy came around the table and said: "Dr. Reid, you are to make a speech this evening." I asked what about, and he said: "Tell them what you are doing on the State Board." There are lots of things I should like to tell you about the State Board, but I cannot. I have been a member of the Board a little over three years. Shortly after I went on the Board I saw some things which displeased me; I spoke of them; the mere speaking of them caused unpleasantness afterward. I said to myself some one will bring this condition of affairs to light. It seems that there was a God in Israel, in Germany. I refer to my first communication with the United States Consul at Munich. He wrote me a simple letter containing one interrogation only. If you could follow that correspondence I am sure you would find it quite interesting and amusing. I read over that letter several times, and said to myself: "He does not have much faith in me or he would not ask such a question." I answered his question. It was but a short time, ten days, perhaps, when another letter came from him, with two questions in it. They were in a different channel. I said: "What is he driving at? It looks as if he is getting me into some sort of trouble; I guess I will quit writing." But after more mature thought I said: "No, I cannot believe that; I will answer those questions." To this letter I received an answer in which he rather opened his heart in a way that made me feel better. There were quite a number of questions in this letter. I answered them, and then followed another letter, and another, until he got out of me about all that could be gotten out of any one, I guess. Then he said that now he thought he had found some one to help him unravel the affairs as they now existed in the State of Illinois. In this letter he asked more questions; it took me three weeks to answer the letter. There is a man present who read that letter and I asked him how he would answer it. He said: "How are you going to answer it?" I said: "I don't know, but I'm going to answer it." Finally the matter became divulged until most of you are familiar with the conditions as they existed and have existed in this State for some time.

It is certainly a humiliating position for me to stand here and attempt to apologize to this State and country or to foreign countries for the conditions in this State. The laws of the State of Illinois are not what they should be, but they seem to be the best we can get at the present time.

Allow me to say a few words in regard to Dr. Miller's remarks about the granting of licenses in this State. I feel sure that he is not familiar with the facts in the case. I shall be brief in this, particularly in explaining how so many of these diplomas come from this State. The diplomas that have been recognized by licenses here have all been obtained by examination. In other words, men come before the Board from a foreign country, for instance, for an examination; they have come here, I do not know by what means, but they have come with the idea and belief that they could obtain a degree in a few months. One of the first things when they land in America is that some one takes them in hand and coaches them for the examination before the State Board, and in two or three months they are able actually to pass the State Board examination. Having passed the Board, a license is given them. Many of the diplomas seen in Europe are those obtained on the strength of these examinations. There have been only a few cases where the licenses have been issued on the strength of the diplomas; there have been some issued on a diploma and an examination. The issuing of two licenses to one man, one on his diploma and the other on his examination before the Board, has been practiced to some extent, but this, of course, is wrong, but it was the practice of the Board for years past, and it was followed out until two years ago, when a diploma was presented by a graduate of one of our colleges of this city who had already passed the State Board examination and been issued a license. Our attorney told the young man to pick up his diploma and get out of the office, telling him he had obtained one license, and that was enough. So, since that time (since I have been secretary of the Board) I have refused to issue a license on a diploma after a man has a license on an examination. With the present personnel of the Board, I believe that I can say to Dr. Miller that many of the evils of the past will be eradicated; that is our intention. I believe we are now in position to redeem ourselves and the State; in fact, as long as I have anything to do with the matter, that shall be our aim. As long as we have the support of the profession in the State, you may believe that you will gain by it.

I should like to say much more, but believe I should not. I feel the humiliation of our position more than, perhaps, you do; but with the knowledge of the past and the knowledge of some things that will come up in the future, I believe we shall redeem our reputation as a Board and exonerate ourselves as men and members of our profession in the State of Illinois.

Dr. Clark: I know it is getting late, gentlemen, but there are several gentlemen here whom we should all like to hear from, if it must be briefly. I will next introduce Dr. Crouse, president of the Dental Protective Association.

Dr. J. N. Crouse: I can add little to the words of welcome, but I wish to heartily second all that has been said in the way of good feeling for the guest of the evening.

As regards the bogus licenses and certificates and the diploma mills, the work is progressing as rapidly as could be expected. Although many individuals have paid high fees for these bogus licenses, they are not all willing to be dragged into the litigation, as a man naturally does not wish to admit that he has bribed a public official, or to admit that he has been cheated in such a game. In the work we need your interest and support. Much time will probably elapse before the end shall have been accomplished, but I can assure Dr. Miller that we are working as rapidly as possible, and that we expect to ultimately wipe out all of this disgraceful business, and to punish the guilty parties.

Dr. J. M. Dodson: I am deeply sensible of the honor done me in inviting me to be present this evening, and I am glad of the opportunity to join in the hearty greeting to your distinguished guest, and to express the obligation of the medical profession for the service he has rendered by his thorough and painstaking researches into the bacteriology of the mouth. While these contributions to our knowledge have most directly to do with the diseases of the teeth, with which you as dentists are concerned, they have also been of distinct value to the medical profession, for we have come to know that the microörganisms of the mouth, situated, as they are, at the very gateway of the digestive tract, have much to do with the disorders and diseases of digestion. No progressive physician now neglects to examine the teeth and mouth carefully in every case of digestive disturbance.

I had not intended to say more than this brief word of greeting, but the remarks of previous speakers in reference to the abuses in the granting of degrees in this country prompt me to offer a suggestion in reference to the standardizing of degrees. I wish I could be as optimistic as some of the speakers in the hope that our State Boards of Medical and Dental Examiners can correct these abuses in the near future. Under existing laws, so far as I have knowledge, no State board, with the exception of the New York State Board of Regents, has any direct control over degree conferring institutions. The Board of Health, in this State, for example, has power only to determine who shall practice medicine (and I believe the same is true of the Dental Board in reference to dentistry) in this State, but it has no authority over colleges conferring diplomas unless the possessors of such diplomas attempt to practice within the State. For several years a notorious diploma mill, maintained by one Armstrong, sold bogus diplomas in the most brazen fashion, and numerous efforts of our State Board of Health failed to stop the abuse; not until the United States authorities secured his conviction for fraudulent use of the mails was the abuse ended. There is practically no restriction exercised in this State, nor in the other States of the Union, with two exceptions, in the matter of issuing charters to colleges of all sorts, which charters carry the power to grant degrees. We can hardly hope for any control by Congress, as under our form of government these are matters which come under the authority of the State and not of the national government. Two years ago an attempt was made to pass a law in this State, creating a commission which should have control of degree conferring institutions; the summary manner in which that bill was disposed of in committee offers but little encouragement for the State that such a law will soon be secured in Illinois. If this be the case in so enlightened and progressive a State as ours, the hope that effective legislation will be secured in numerous other States, especially in the West, seems very remote indeed. Until such legislation is procured, all of the colleges of the country will be more or less subjected to the opprobrium attaching to diploma mills scattered throughout the Union.

The idea has occurred to some of the medical profession that the better schools might protect themselves and give character to degrees honestly issued through the medium of a federation, and such a step would seem to be equally feasible by the dental profession. Suppose, for example, a number of the leading dental colleges with rigid requirements for admission, a compulsory four years' course and thorough examinations at the end of the course as a prerequisite for the degree, were to combine themselves in a federation and elect as officers men of high professional attainments, and whose reputation for honesty and high character in every sense is widely known among their professional confrères abroad; and that officers of the federation, or a committee should have full authority to inspect any of the constituent schools at any time, or to submit any of its candidates for graduation to examination—in a word, to assure themselves that the high requirements of the federation were being strictly maintained. A seal should be provided by the federation, and this seal in connection with the signatures of the officers of the federation should be placed upon every diploma issued by a constituent college; would not this seal, with perhaps an accompanying certificate signed by the officers of the federation, soon come to have a standing and carry a weight equal to that of our State and national government? I believe it would, and until such time as we may be able to secure efficient legislation controlling the granting of diplomas such a federation would afford efficient means of giving character and weight in foreign countries to the degrees issued by our better colleges.

DR. CASE: Mr. Toastmaster and Gentlemen—I tried to have Dr. Brophy cross my name from the list of speakers this evening because I see many here who would welcome our guest with more fitting eloquence than it is possible for me to do.

If Dr. Miller could realize the honor and pleasure we feel in welcoming to Chicago a man whose name has been to us above all others. If he could also fully understand the accord and pleasure with which every society applauds his name whenever it is mentioned in this, his native land, perhaps he would feel in a measure repaid for the great labor of these years, and for the sacrifices of time and energy which have been necessary to raise him to his present position.

We American dentists fully understand and appreciate the importance of these truths which have come from him year after year from across the water. While we have been standing on the seashore, as it were, watching these white caps come in bearing on their crests the name of Miller, and we are here to-night to do honor to him, this greatest of representatives of the dental profession.

DR. THOMAS L. GILMER: Mr. Toastmaster, Gentlemen and Honored Guest—To-night for the first time I had the pleasure and honor to meet Prof. Miller, though I am well acquainted with him. Dr. Black introduced me to him many years ago, indeed he introduced many of us to him at a meeting of the Illinois State Dental Society about seventeen years ago when he proved Dr. Miller's findings regarding the cause of decay of teeth. None of us have ever lost sight of Dr. Miller and his great work since.

Prof. Miller, our welcome to you is as sincere as it is hearty. We are delighted to have you with us in Chicago. We are glad that you recognize the fact that Chicago is a great educational center. It is indeed, and we are also pleased that you have recognized the good feeling and fellowship existing between those of us engaged in the several schools as teachers. We take great pride in this fact. Our rivalries are principally as to the quality of work we do. It could not well be otherwise with two such earnest educators as Professors Black and Brophy at the head of the two largest schools in the city. We are deeply humiliated that our fair name has been brought in such disrepute in your adopted country, but we intend that the stigma shall be removed and we congratulate ourselves on the fact that we have one of such distinguished standing as yourself in Germany, who knows the truth and who will aid us in retrieving our good name which has been so wickedly traduced.

In my library I have two books which I prize more highly than any of the others. They are Miller's "Microörganisms of the Human Mouth" and Black's "Formation of Poisons." These books are always kept side by side.

We hope you will visit us often and I am sure that the dentists of Chicago will accord to you a royal welcome on each occasion.

Dr. J. E. Nyman: The distinguished gentlemen who have preceded me have each represented the officers of army of the profession—I am simply one of the vast rank and file and shall presume to regard myself as their representative and for them tender our guest—one of the greatest officers of our profession—a cordial, loyal, loving welcome.

There are meetings so memorable that they are never forgotten. So memorable because they are the fulfillment of the longings and the hopes of years.

One who saw the face, heard the voice, felt the hand, never forgot Gladstone or Bismarck, never forgot Washington or Grant, never forgot Lincoln, our first martyr, or the one whom we have just laid away with tear-dimmed eyes and heavy hearts, McKinley, the well beloved—our last martyr.

Meetings with great men are stimulants from which there is no reaction.

I could not forget if I would my first meeting with some of the great men of my profession.

With Dr. Cushing—dear old "Uncle George," whose kindly soul shone in his eyes, whose great heart could be heard in his voice and its warmth felt in the clasp of his hand.

With Dr. Atkinson, whose enthusiasm and optimism were an inspiration.

With the beneficent Dr. Garretson.

With Dr. McKellops, who was the incarnation of whole-souled good-fellowship and unfailing courtesy.

Nor will I ever forget the meeting which this occasion affords and which I have long looked forward to.

With one whose name is a synonym of truth. With one whose name is so familiar—whom we trust so confidently and whose words we believe so implicitly.

With one of our own race, of our own country, of our own blood, who by sheer ability has overcome the antagonistic prejudices of the old world—who has so impressed "those who sat in the high places" of one of the centers of science, that of their own accord they made a place for him and invited him to sit with them as their peer.

We honor him as one of that band who have elevated our calling from the sphere of the barber shop to that larger one of the laboratory and the operating room, and from the plane of a trade to that higher one of a profession, who have classified and amplified the knowledge that was once merely a tradition until now it is a science.

He is renowned as an investigator.

The life of an investigator is one of vicarious sacrifice inspired by the love of—the desire for—the truth, and the welfare of mankind.

And his chief reward is the expressed appreciation of those whom he has benefited.

He is a true investigator.

To my mind such a one is he who seeks the truth to formulate a theory therefrom and not one who seeks simply to substantiate a preformulated theory.

Great men are never lost to us, their spirit which urged them on and made them great, is deathless and though their voices grow faint and fainter until they cease; their forms fade from our sight, and their footsteps die out forever; their spirits remain a subconscious influence for our guidance and our good.

Nor will our guest ever be lost to us. God grant him many years yet to come. But come what may his spirit will be with us, always an inspiration and a guide.

This I say reverently and sincerely and certain am I that I voice the thoughts of the rank and file, especially the young men of it.

One who loves the truth seeks the truth and imparts the truth to others when he finds it, has a rank above prince or potentate—he is a nobleman of nature, a master of men. Yes, he is an ambassador of the Almighty and his memory is immortal.

Dr. E. S. Talbot made some remarks which were well received, but our reporter had disappeared. Dr. Truman W. Brophy made a characteristic speech which was received with great applause. The last speech of the evening was made by Dr. A. W. Harlan. This closed the exercises.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.

ASSOCIATE EDITOR: A. E. MOREY, PH. B., D D. S

THE DENTAL REVIEW.

At the beginning of the new year the subscription price of this journal is placed at $1 per annum throughout the realm of the United States of America and $2 for all foreign countries. We expect that we will have 20,000 readers by the end of 1902 and the quality of the matter will be even better than it has been in the past. If you are not a subscriber, well, you will become one at once and spend the year with us.

THE COMPLIMENTS OF THE SEASON.

For many years we have extended our good wishes to our friends and contributors and our readers. They are more numerous than they were one year ago by many figures. This has been a year of great results in all professions and in business the wheels of commerce have kept the earth hot by the rapid revolutions. Since the great panic of '93 nothing like it has been seen and we rejoice with all good men and true that material prosperity not alone is shared by banker or merchant but that the professions have their due and proper proportion. If you would continue to have the sun shine upon you, be earnest and honest, be industrious and studious, be not afraid to speak the truth and do honor to the calling. There are so many hindrances to fulfilling all your good aspirations, be alert to tramp on a few of them and grind them into the dirt; live up to your capacity for work and do not spend all the time living upon the thought and labor of others. If you have fallen short in your expectations or desires or in the success that you really merit, work harder the next year to gain the prize you are looking for. Wishing one and all a Merry Christmas and a Happy New Year.

Pulp Digestion.

For more than a year now, since presenting a paper to the International Dental Congress at Paris, 1900, I have been using the PAPAIN PASTE to digest pulps. The papain paste is composed of the following:

℞.	Papain (Merck)	gr. 1.
	Glycerine (Price's)	min. 1.
	$\frac{1}{300}$ hydrochloric acid	gtt. 1.

M.

When the pulp is *dead* remove the bulbous portion and work the remainder with distilled water slightly acidulated with acetic acid or hydrochloric acid (one to five hundred). Press the paste into the cavity so as to fill it nearly full. Cover the paste with some paper fiber lint. Moisten with liquid vaseline and cover this with oxysulphate of zinc or gutta-percha. Be sure that the paste is sealed into the cavity thoroughly well. If you are in no hurry about filling the tooth, you can leave it for three or four weeks, or even longer. I have had some experiences with third molars during the past year where the teeth were hard to reach and it was not easy to remove the pulp mechanically. In all these cases I allowed the paste to remain about two weeks and then changed it, leaving it three weeks longer. There have been no failures in these cases.

In all bifurcated roots and tortuous roots and in roots not easy of access this is a safe, sure and certain method of getting rid of pulp tissue. I do not claim for or pretend that this method will supersede all other methods of pulp removal, but I do contend that the dentist who will practice it will get better results, as the pulp will be liquefied or disintegrated so that its remains can be washed out of the canals and he will be able to fill such roots, which in many cases are not filled now. A portion of a pulp left in a root is always detrimental to that tooth. It gives rise to a low grade inflammation of the pericementum which is annoying to the patient and usually results in an abscess. It needs little argument to convince most men of the necessity for good root fillings. The mummifying question is too far off for a lifetime work and until better mummifiers are put together than those we now know about I prefer root filling.

A root cannot be filled with a portion of the pulp within it; digest it and wash it out with H_2O_2 or a hot bichloride solution 1 to 2000 or any other disinfectant that you choose. Be sure and digest the pulp first.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

To the Editor of the Dental Review:

Dear Sir:—The meeting of the Central Dental Association of Northern New Jersey on October 19 was its first meeting of this fall. It was held at the usual place, Davis' parlors, 943 Broad St., Newark, N. J. After partaking of a bountiful dinner, as is their custom, the session convened at 8 o'clock with President Gregory in the chair.

As this was the opening meeting of the fall there were several preliminaries—applications for membership, resolutions regarding the death of some members, and a general "girding of the loins" preparatory to the winter's work.

The paper of the evening was by Prof. Wolfram Dreyfuss, of Columbia University, N. Y., entitled, "On the Relation of the Chemical Constitution to the Physiological Action of Some Modern Remedies, according to Recent Research."

This paper was to have been read last summer at the annual meeting of the New Jersey State Dental Society at Asbury Park, but owing to illness in Prof. Dreyfuss' family, was postponed.

To one with a good degree of knowledge concerning chemistry, the subject would have undoubtedly appealed. Prof. Dreyfuss' handling of it, leading up to the anesthetic properties of various products was of interest on that score to the dental profession. The subject, however, was so deep, and the means of approach to the study of the anesthetic qualities so tedious that the large audience rapidly dwindled to less than a "corporal's guard." Prof. Dreyfuss spoke of his lecture as an experiment to ascertain whether such an address would be acceptable to dentists as he thought it should be; apparently it was a disastrous experiment.

Are dentists too practical?

The meeting of November 16, of the Central Dental Association of N. N. J. goes into history as a unique venture on the part of that society.

Dr. Joseph Head, of Philadelphia, read a paper entitled, "The Sterilization of Enamel and Removal of Superficial Decay," which, like all of the doctor's work, was well presented. It dealt with the treatment of enamel with peroxide of hydrogen and peroxide of sodium.

Dr. R. M. Sanger opened discussion of the subject, and was followed by Dr. C. S. Stockton, J. Allen Osmun, B. F. Luckey and John I. Hart, of New York.

Two events of the evening contributed to mark that meeting as distinctly peculiar.

One was the taking of a flash light picture of the members and guests assembled at the dinner (which precedes the regular meeting) for the *Sunday News*, a Newark newspaper and the publishing of the same in the issue next day together with the second distinct feature of the evening, "Dentists to Ask Carnegie's Aid." The article reads : "Decided at meeting last night to seek his assistance in furthering study of the teeth."

Dr. Meeker presented a resolution "Central Dental Association concludes that Research into the Matter of the Microscopical, Histological and Bacteriological Study of Embryonic and Organized Teeth is Highly Important. Committee approved."

It was decided at the meeting of the Central Dental Association last night to ask Andrew Carnegie to extend his aid in the endowment of an institution for microscopical, histological and bacteriological study, etc. The need of such an institution was presented by Dr. Chas. A. Meeker, treasurer of the organization, and with the exception of one member all present concurred in what Dr. Meeker said. It is the belief of most of the members of the association that Mr. Carnegie will recognize the usefulness of the proposed institution and that he will financially assist in the movement to secure it. At the request of Dr. Meeker, Dr. F. G. Gregory, president of the association, appointed a committee of five to wait on Mr. Carnegie to ascertain his views. The committee consists of Dr. Meeker, Dr. Stockton, Dr. Osmun, Dr. Sanger and Dr. Luckey. The formal resolution presented by Dr. Meeker, which brought about this result, reads as follows:

Believing that a perfect denture and normal health of the tissues of the oral regions conserves in the highest the perfect health in the body of the growing children of the coming generations, and the fact that at the present time there is no organized or endowed effort for the microscopical, histological and bacteriological study of embryonic and organized teeth, therefore, be it

Resolved, That a committee of five be appointed by the president to present to Mr. Andrew Carnegie, of New York, the need of an endowed institution for such studies and others allied and most respectfully ask his aid in the furtherance of the same.

The regular meeting of the Institute of Stomatology for November falling on the evening of election day, was postponed to Friday evening, November 8. It was held at the office of Dr. C. B. Parker, 167 Remsen St., Brooklyn. Dr. Chas. F. Allan, of Newburgh, read a paper entitled, "What Should be the Relation of Our Government to the Dental Profession?" which seemed to be largely a plea for *free trade* in the matter of many imported articles for the use of the dentist. His statistics concerning discrimination in the tariff favoring certain manufacturers, and in all cases detrimental to the interests of the dentist, were very full. The society has ordered reprints, and the matter is well worth looking into. Two professional gentlemen of Brooklyn discussed the subject in a pessimistic vein, while Prof. R. H. M. Dawbarn, of New York, seemed to think that by coöperation and incessant activity much might be accomplished.

Following this came a discussion on Dr. Garrett Newkirk's paper on "Preventive Dentistry," as published in the October *Digest*, pages 743-749. To facilitate the discussion an analysis of the paper was sent each member as follows:

PREVENTIVE DENTISTRY.

ANALYSIS OF PAPER BY GARRETT NEWKIRK, M. D.

(Read before the Illinois State Dental Society, at Rockford, May 14-17, 1901. Published in *The Dental Digest*, October, 1901.

Primarily all dentistry seems reparative, but is really preventive—important to dentists to know laws of hygiene—care of children's teeth important—each dental office should be a training school in the care of teeth, looking to prevention—deciduous teeth of great value in relation to permanent—care for them required to prevent pain and loss—first permanent molar to be carefully and frequently watched, the idea of prevention being ever present—"a clean tooth never decays"—work should begin with a thorough cleansing, though this is often neglected by dentists—probably most cases of pyorrhoea could be prevented by such care—malocclusions should be corrected to prevent irritation or even fracture—there should be a closer relationship between dentist and physician—the physician's examination should include general observation of teeth—local medication good in so far as it improves conditions of mouth—superficial caries should be removed and teeth medicated for arrest of decay.

This idea was a "new departure" and seemed to meet with general favor. The discussion, however, was one-sided, being *with* the Doctor rather than against him.

The annual meeting of the Institute of Stomatology occurred Tuesday evening December 3, at the residence of Dr. S. E. Davenport, 55 West Forty-seventh St.

As this is a purely business meeting, none but active members were present. The usual routine business of an annual meeting, election of officers, etc., was transacted. The Institute was reported in a flourishing condition, numerically and financially. Most of the officers were reëlected. The following are the officers for the ensuing year: President, J. Morgan Howe; vice-president, A. H. Brockway; recording secretary, F. Milton Smith; corresponding secretary, George A. Wilson; treasurer, J. Adams Bishop; editor, Frederick L. Bogue; curator, James G. Palmer; executive committee, Chas. Otis Kimball, Chas. F. Allan, S. E. Davenport, chairman.

At the November meeting of the New York Odontological Society, held at the Academy of Medicine on the 19th inst., Dr. Walker presiding, made the announcement that one of the greatest annual meetings in the history of the society would take place in January, 1902.

He invited members of all other dental societies here about to be on hand as the program would certainly be such as to warrant their making sacrifices to be present.

This was an unusually well attended one for any dental meeting. It does not happen very often that the meeting room becomes filled but upon this occasion it was so, and so it should be always.

Dr. Wm. Carr referred during "incidents of office practice" to the filling of pulp canals by some fellow practitioner, with sealing wax dissolved in alcohol, and thought it was new practice, but Dr. Evans and others made the assurance that that practice was ancient and that somewhere in dental literature it is recorded.

Dr. Evans made a statement in reference to porcelain work which startled. His experiments prove to him beyond a doubt that *low fusing body shrinks much more than high fusing.*

The essayist of the evening was Dr. Geo. A. Mills, of New York. The title of paper was "The New Departure of the Present Century" (the basis of which was physiological prophylaxis), the substance of which was the emphasizing of Dr. D. D. Smith's work—the systematic and frequent periodical pumicing of the teeth on all surfaces. The paper dogmatically expresses his convictions dating back many years, increasing in strength with the years. He deplored the tendency of the student drifting toward commercialism.

Discussion of the paper was opened by Dr. Taylor, of Hartford, Conn., who referred to Dr. Smith's practice of making annual contract with patients for a certain sum of money to call as often as they choose to have the teeth cleaned. He said, patients are not willing to pay money and not call for the goods, and that Dr. Smith's practice solves, in a legitimate way, painless dentistry. The patient too is shorn of fear. As to the what to clean teeth with, he said, I care not what you use *but how you use it.*

Drs. Littig, Brewster and Farrar said they did not approve of the practice so often as advocated, mainly because of the time it consumed, and that they did not understand why the process was called "new departure," for the systematic cleansing of the teeth was advocated by Riggs and by others before him.

Dr. Walker stated that Dr. Michaels, of Paris, has for years practiced this method even more scientifically. His practice was to make a chemical analysis of the secretions of the oral cavity and then determine how often (what intervals) the patient should call, some requiring to present much more frequently than others.

Dr. N. W. Kingsley was present and took issue with Dr. Mills.

Dr. Mills insisted that it, the "new departure," was not an *old* but new systematic physiological practice.

Dr. Rhein sustained Dr. Mills, but said he has been following such system for years. He referred to some new work Dr. Kirk, of Philadelphia, was inaugurating in the University of Pennsylvania toward the study of the oral secretions, etc.

To sum up the situation as gleaned from the discussions that have been in progress for a year on this subject: Apparently all admit that the dentist's periodical cleansing of the teeth is good practice, but they seem to haggle over the time it consumes and fear that they would not be able to accomplish sufficient other work if they entered on the "new departure" too generally. It does not appeal to them as being thoroughly dignified procedure—cleaning teeth, i. e., tooth cleaners.

Yours truly,

"THE BOROUGHS."

REVIEWS AND ABSTRACTS.

The Transactions of the National Dental Association for 1900 are before us. The meeting was held at Old Point Comfort, Va., July 10, 1900. The issue is neatly bound in cloth with 263 well printed pages, and published by the S. S. White Dental Manufacturing Company.

Eighteen papers were presented to the various sections, seven to the section on operative dentistry, two to the section of anatomy and surgery, five on prosthetic dentistry and dental education. We have carefully searched among these papers for something that was a new contribution to the sum total of dental knowledge.

Aside from the paper on "The Evolution of the Complex Molar from the Simple Cone" by Dr. Alton H. Thompson, which was the most scientific paper read before the body, and several others, there was no new light shed, no new contribution given.

There is often benefit in "Twice Told Tales." The value of repetition is not to be overlooked, and taking this view point the interest and value of the papers cannot be gainsaid.

Possibly the paper containing in its suggestiveness the most startling innovations, was the president's addresss, and in this connection it might not be inopportune to quote them. Says he: "The normal function of this association, let us hope, will never cease to be educational. We do not believe, however, that the greatest good can be accomplished on desultory lines of its present plan of work. There must be appointed commissions, backed by the authority of the association, to collect data, to prosecute research, and these commissions must be selected with a view to their special fitness for the task assigned. It is not enough that any ordinary dentist without special training or thought, but with commendable willingness, should read an amateurish essay before a section of this body leaving the subject just where it was before. This is not the place for kindergarten work. Instead the commission, through correspondence, etc., should have well in hand the essence and outcome of the work of the year. This would be a peg from which to start succeeding efforts. This desultory reading of papers on same subjects, repetitions last year, this year, and next year, the same thing over and over again, makes such reading a weariness to the flesh and deprives our association of any 'distinctive character.'" Again he says, "Too many papers are being published. The local society is the place for the nestling to try his wings," etc., etc.

The wisdom of this portion of the president's address must be apparent to all thoughtful dentists. That he had the courage to say it on such an occasion is a thing to be commended, and one can only hope that his suggestion will be carried out. The association will largely gain in interest and membership by such a scheme or something similiar, at least it appears so to us from this distance. C. E. BENTLEY, D. D. S.

GORGAS. QUESTIONS AND ANSWERS. Embracing the Curriculum of the Dental Student, divided into three parts. By FERDINAND J. S. GORGAS, A. M., M. D., D. D. S., author of "Dental Medicine," etc., Professor of the Principles of Dental Science, Oral Surgery, etc., in the University of Maryland, Dental Department, Baltimore. Published by P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia. Octavo, 540 pages. Price, cloth, $6 net.

This is a compilation of Dr. F. J. S. Gorgas, one of the indefatigable book makers. From an examination of the work, we believe it to be quite in accord with the best thought of the scientific world.

GRAY'S ANATOMY. Fifteenth revised edition. Edited by T. PICKERING PICK and ROBERT HOWDEN. Published by Lea Brothers & Co., Philadelphia, Pa. Illustrated with 780 drawings and cuts. 1901. Cloth, price, $7, in colors.

Any student who will carefully study this well-known work cannot fail to grasp the essentials of a broad comprehension of human anatomy. Any minor errors of the names of terms, or even in the illustrations are counterbalanced by the extreme excellence of the work as a whole. We look upon the possession of a Gray as a matter of necessity for every progressive medical man and dentist.

DENTAL ELECTRICITY. By LEVITT E. CUSTER, B. S., D. D. S., Dayton, Ohio. Wth more than 200 illustrations. Published by the U. B. Publishing House. 1901. Dayton, Ohio. Pages 531. Cloth, price, $5.

The author of this work is too modest, as he says in the preface, "The author does not presume to present anything new upon the fundamental subjects, etc." From a somewhat careful examination of this well-printed and illustrated volume we have received much new light. The work of Morton on cataphoresis and that of Guillermin on magnetism and electricity combined fail to present the subject matter in so clear a light as the work of Custer. All students will be interested in this work, which is well worth the price. Make yourself a Christmas present of it and then read it.

BOOKS RECEIVED.

Studies of the Internal Anatomy of the Face. By M. H. Cryer, M. D., D. D. S., Philadelphia. The S. S. White, Dental Mfg. Co. Price, cloth, $1.50. Pp. 176. 1901. Illustrated.

MEMORANDA.

Dr. J. D. Patterson, of Kansas City, was in Chicago in November.

Dr. W. E. Walker has concluded to devote himself to orthodontia and facial orthopedia.

The Antikamnia Chemical Co. will soon have a new building at a cost of $75,000 on Twenty-second and Pine Sts., St. Louis.

The ninth annual clinic of the Alumni Association of the Chicago College of Dental Surgery will be held Wednesday, January 22, 1902.

Dr. C. J. Essig, of Philadelphia, died Monday, December 2, after a long illness. We hope to publish a sketch of his life in a later issue.

Mr. Thos. A. Long, for many years with the S. S. White Co., is dead Everybody knew him as "Tom," and his face will be missed for many a year now.

The first volume of the transactions of the International Dental Congress, held in Paris, August, 1900, has been published and will be sent to subscribers and members during the month of December.

Trinity College, Toronto, has conferred the honorary degree on Mr. E. L. Oldfield, of Melbourne. It is understood that Dr. Oldfield returns to Melbourne very soon to take up active work in college and in private life.

Dr. J. G. Van Marter, formerly of Rome, Italy, is dead. Dr. Van Marter retired from practice some years ago and his name was not associated in recent years with communications, so that his will not be a familiar name to the more recent graduate. Dr. Van Marter was a cultivated gentleman of excellent parts and did much to endear the name of American dentists to residents of Italy. Dr. Van Marter was aged sixty-six.

TREATMENT OF OZENA BY METHYLENE BLUE.

Five patients were cured of ozena in three or four weeks by daily irrigation of the nasal cavities with methylene blue in the proportion of two and five-tenths gm. to the liter of water. The irrigations were made three times a day at first. Except for the stain on the nostrils and upper lip, this method of treatment has no disadvantages.—*Bonnet*

ODONTOLOGICAL SOCIETY OF CHICAGO.

At the annual meeting, held November 19, the following officers were elected for the ensuing year: President, A. O. Hunt; vice-president, E. J. Perry; secretary-treasurer, Elliot R. Carpenter; curator, J. E. Hinkins; board of censors, C. S. Case, J. H. Woolley and W. V-B. Ames. The next meeting will be held at the Victoria Hotel, the third Tuesday in December.

CHLORAL AS A VESICANT.

If chloral hydrate is spread on a diachylon plaster and applied to the vaselined skin, the part begins to burn in fifteen minutes. The plaster is then removed and the part covered with cotton. A phlyctena forms and the patient drops to sleep. Bonnet uses about three gm. of the chloral for a plaster twelve by fifteen cm. in size. The subsequent slumber proves that the substance is more or less absorbed.—*Bonnet.*

TOOTH WASH.

Castile soap	1½ ozs.
Oil of orange	10 mins.
Oil of cassia	5 mins.
Oil of wintergreen	15 mins.
Glycerin	3 ozs.
Alcohol	8 ozs.

Water enough to make one quart.

TREATMENT OF NEURALGIA.

The following is recommended in the superficial forms of neuralgia:

℞.	Menthol	ʒss	2.
	Olei gaultheriæ	ʒi	4.
	Tinct. capsici	m. x	.66
	Ext. belladonnæ	gr. xxii	1.50
	Lani	ʒiv	15.

M Sig.: To be applied to painful area two or three times a day.

ASTRINGENT DENTIFRICE.

Sabrazes, in *Jour. de Med. de Bordeux*, recommends the following:

℞.	Saccharin	gr. viiss	.5
	Acidi benzoici	ʒi	4.
	Tinct. krameriæ	℥ss	16.
	Olei menth. pip	m. vii	.5
	Olei cinnamomi	m. x	.66
	Alcoholis	℥iii	96.

M. Sig.: Use as a dentifrice.

TREATMENT OF TIC DOULOUREUX (TRIGEMINAL NEURALGIA).

The following is of service as recommended by Merck's Archives:

℞.	Butyl-chloral hydratis	gr. lxxx	5.30
	Dionin	gr. iv	.25
	Alcoholis	℥ss	16.
	Glycerini	℥i	32.
	Aq. destil. q. s. ad	℥iv	128.

M. Sig.: One dessertspoonful every half-hour until relieved, or three to four dessertspoonfuls every four hours.

Dionin is said to produce no such bad after-effects as morphine, such as nausea, constipation, etc. It can be given in doses ranging from one-fourth to one grain.

RECENT PATENTS RELATING TO DENTISTRY.

35,182. Design, dental engine angle handpiece handle, Arthur W. Browne, Prince Bay, N. Y., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa.

684,984. Dentist's tool, John C. Graft, Newark, N. J.

684,841. Head rest for dental chairs, Mont. C. Merker, Philadelphia, Pa.

684,842. Elevating mechanism, Mont. C. Merker, New York, N. Y.

684,844. Dental chair, Mont. C. Merker, New York, N. Y.

684,951. Attachment for dental tools, Wm. C. Rothkranz, New York, N. Y.

685,659. Dental implement, Gilbert M. Williams, Maysville, Ky.

Copies of the above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

INSTITUTE OF DENTAL PEDAGOGICS.

The ninth annual meeting of the Institute of Dental Pedagogics will convene on Tuesday, December 31, 1901, and continue for three days at the Seventh Avenue Hotel, Pittsburg, Pa.

The usual New Year rates can be obtained. This is the only normal school existing in the dental profession. A partial program is submitted.

"President's Address," by G. E. Hunt, Indianapolis.

"Conduct of the Operatory Clinic," by G. V. Black, Chicago. (A method of keeping records, grades, etc.)

"Executive Work of the Faculty," by Drs. Kirk, Patterson, Stubblefield and Hart. (A symposium.)

"Metallurgy, How to Teach," by Dr. Hodgen, San Francisco.

"Class Room Methods of Teaching," by Drs. Hoff, Nones, Tenney, Foster. (Symposium.)

"Teaching of Prosthetic Dentistry," by G. H. Wilson, Cleveland.

"Bacteriology, How to Teach," by W. R. Blue, Louisville.

"Report of Committee on Operative and Prosthetic Technic," by Drs. Weeks and Hoff.

D. M. CATTELL,
Chairman Ex. Board.

NEW YORK ODONTOLOGICAL SOCIETY.

The thirty-fifth anniversary meeting of the New York Odontological Society will be held at the Academy of Medicine, 17 W. Forty-third St., New York City, January 21, 1902.

For the afternoon meeting, which will begin at 2 o'clock, an interesting list of clinics has been arranged, which will include the following: Dr. G. W. Schwartz, of Chicago, making and setting a porcelain bridge; Dr. Geo. Evans, of New York, demonstrating the use of gutta-percha cement and exhibiting new instruments and appliances for its manipulation; Dr. Robert Good, of Chicago, treating a case of pyorrhoea and exhibiting a case under treatment; Dr. Joseph Head, of Philadelphia, demonstrating a new method of bleaching and sterilizing stained enamel. At this meeting also Dr. J. E. Hinkins, of Chicago, will read a paper on "The Further Consideration of the Disintegration of Cements When Used In or Around the Teeth."

The evening meeting will take place in the large auditorium of the Academy of Medicine, at 8 o'clock. The paper of the evening will be read by Dr. A. W. Harlan, of Chicago, subject, "The Basis of Dental Medicine."

W. D. TRACY,
Corresponding Secretary,
46 W. Thirty-seventh St., New York City.

THE FIFTY-FIFTH ANNUAL MEETING OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS. ELECTION OF OFFICERS.

The fifty-fifth annual meeting of the Pennsylvania Association of Dental Surgeons was held October 8, 1901. The following officers were elected for the ensuing year: President, Dr. Wilbur F. Litch; vice-president, Dr. Eben M. Flagg; secretary, Dr. J. Clarence Salvas; treasurer and librarian, Dr. Wm. H. Trueman.

The Pennsylvania Association of Dental Surgeons was organized at Philadelphia, December 16, 1845, and from that date to the present time has had a continuous existence, dating back, as it does, to the early days, the dawn of organized effort for professional advancement, it is a connecting link between the past and the present. The society is one of the very few that have been sustained, and is the oldest dental society in the world; notwithstanding the fact, that the organization of other local societies drew, from time to time, many of its more active members, it has, nevertheless, continued to hold during this long period its regular stated meetings. The past year has been one of marked prosperity; there has been a large increase in membership and the meetings have been well attended, and have been made the medium for presenting papers of much practical usefulness to the profession, and hence having permanent value as contributions to current dental literature.

J. CLARENCE SALVAS, *Secretary.*

Dr. J. W. Cormany, of Mt. Carroll, visited Chicago in December.

If you will take a saturated solution of menthol in alcohol....ʒi
$\left.\begin{array}{l}\text{Oil cocain}\\ \text{Oil cajeput}\end{array}\right\}$ aa..ʒ*ss*

and apply in cases of facial neuralgia externally you will find it excellent. Apply on the gums also.

Following are the officers of the Ohio State Dental Society for 1902: President, Otto Arnold, Columbus; first vice-president, J. B. Beauman, Columbus; second vice-president, J. F. Stephan, Cleveland; secretary, S. D. Ruggles, Portsmouth; treasurer, C. I. Keely, Hamilton.

S. D. RUGGLES,
Secretary.

THE ARMY DENTIST.

From the paper of the president of the Army Dental Board, published in the *Dental Digest* for November, it appears that twenty-seven of the posts have been filled and that three positions are vacant. We presume that the dental societies of this country will be glad to welcome the occupants of these posts to membership in the societies adjacent to the army posts. So far as Chicago is concerned, the membership has been proffered to Dr. W. C. Fischer, who is located at Fort Sheridan. We had hoped that all dental societies would receive the army dental surgeon as a member, as soon as he was appointed, with open arms. At the last meeting of the Chicago Dental Society a resolution was passed giving the dental surgeon at Fort Sheridan all the privileges of membership to Dr. Fischer, but not providing for his successor in case he was transferred to some other post. We think that the least a society can do is to extend the courtesy of membership to a dental surgeon without dues, as he is liable to be sent elsewhere on short notice, and it seems only fair that he should be received with open arms by his compeers.

For some reason best known to the army of objectors this was denied at the late meeting of the leading local society of Chicago by the usual objectors to all forms of real courtesy. Any member of the medical corps of the army or navy goes into a meeting feeling that he is welcome to all privileges without dues. This is an invitation to all societies to extend a welcome to army dentists and full fellowship at all times and under all circumstances.

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